Supplementary Information for

Bayesian Molecular Optimization for Accelerating Reverse Intersystem Crossing

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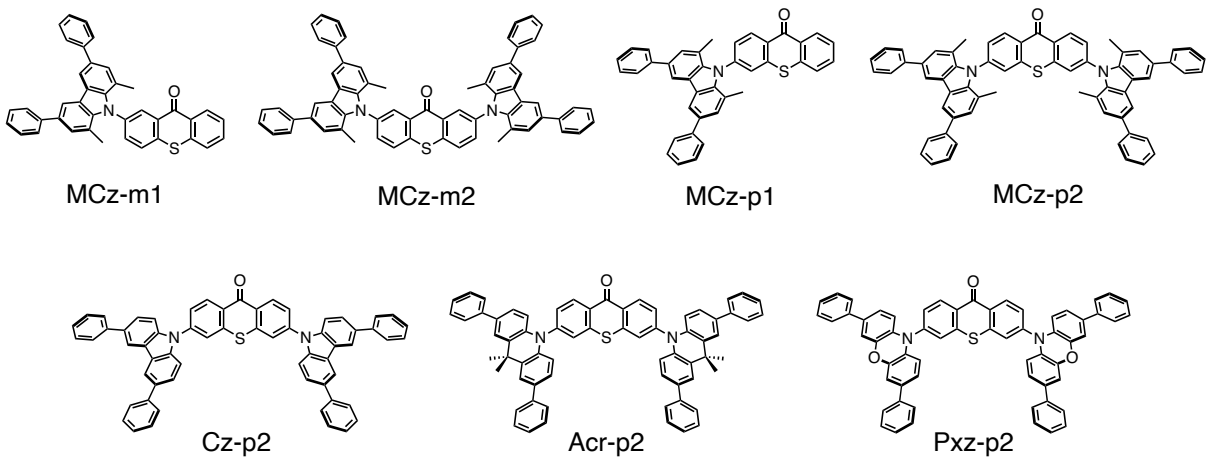
This PDF file includes:

1. Supplementary figures

A



B

	F_P					
	Sub. Pos.	Sub. No.	Cz	MCz	Acr	Pxz
MCz-m1	1	0	0	1	0	0
MCz-m2	1	1	0	1	0	0
MCz-p1	0	0	0	1	0	0
MCz-p2	0	1	0	1	0	0
Cz-p2	0	1	1	0	0	0
Acr-p2	0	1	0	0	1	0
Pxz-p2	0	1	0	0	0	1

Fig. S1. Seven thioxanthone derivatives. (**A**) Molecular structures of MCz-m1, MCz-m2, MCz-p1, MCz-p2, Cz-p2, Acr-p2, and Pxz-p2. (**B**) Relevant $\boldsymbol{F_P}$ in a six-dimensional space.

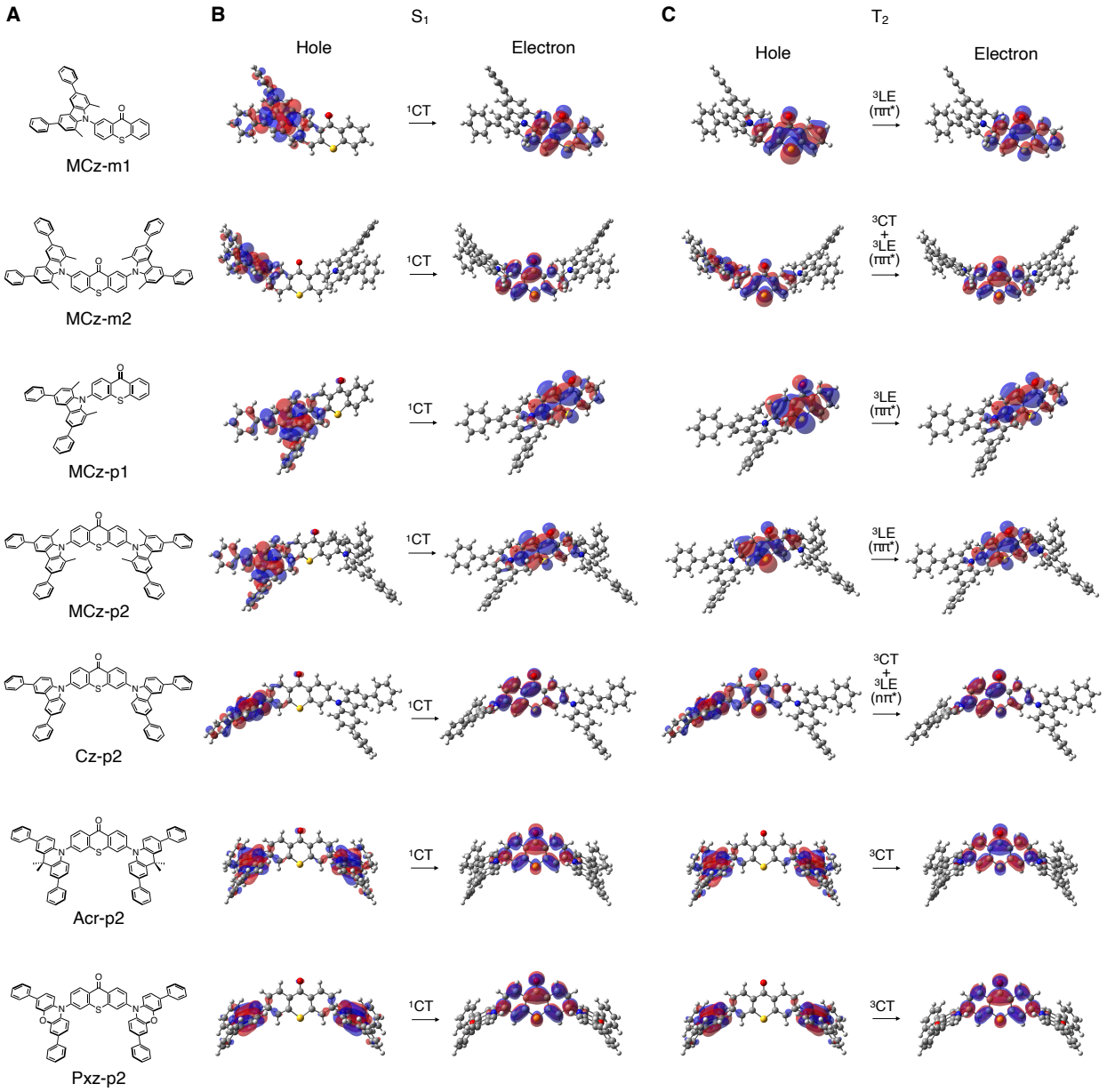


Fig. S2. Electronic configurations at the minimum-energy singlet-triplet crossing seam. (**A**) Molecular structures of MCz-m1, MCz-m2, MCz-p1, MCz-p2, Cz-p2, Acr-p2, and Pxz-p2. (**B**) Natural transition orbitals (NTOs) for S_1 and T_2 of the seven molecules calculated at the minimum-energy S_1/T_2 crossing seam.

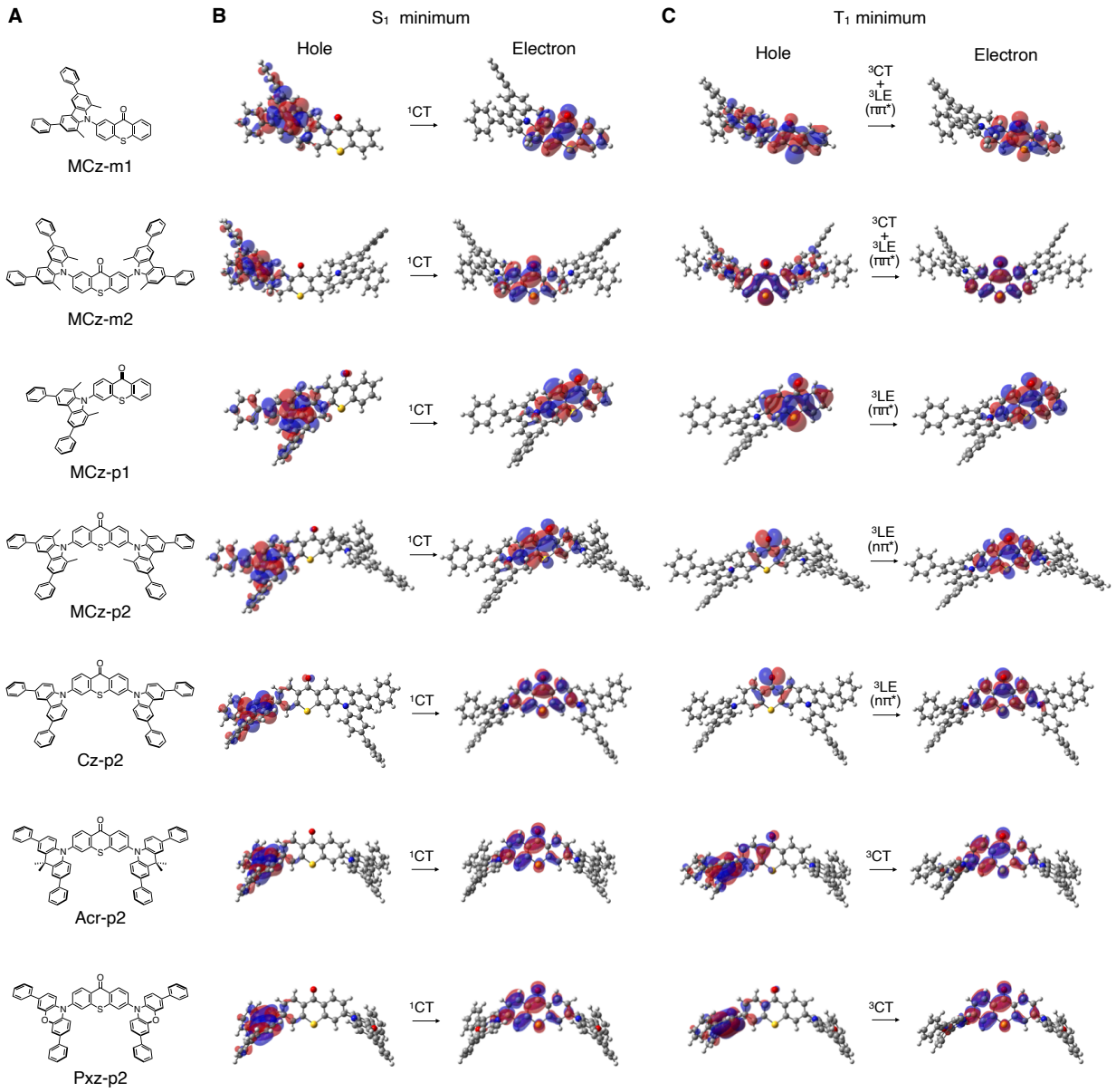


Fig. S3. Electronic configurations at the minimum-energy S_1 and T_1 geometries. (**A**) Molecular structures of MCz-m1, MCz-m2, MCz-p1, MCz-p2, Cz-p2, Acr-p2, and Pxz-p2. (**B**) NTOs for S_1 and T_1 of the seven molecules calculated at the minimum-energy S_1 and T_1 geometries.

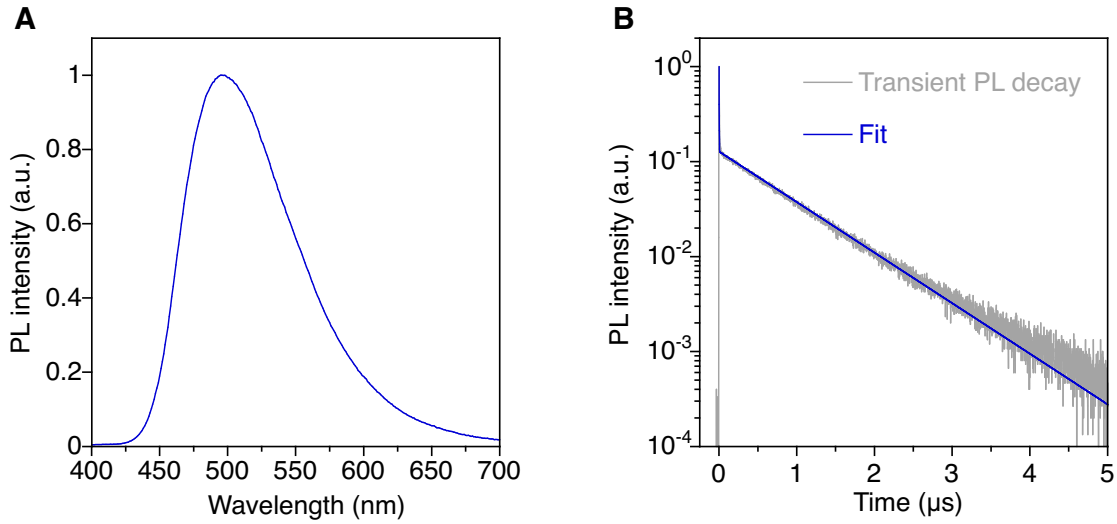


Fig. S4. PL of mCBP. (**A**) Steady-state PL spectra of a 12wt% MCz-p2:mCBP film. (**B**) Transient PL decays of a MCz-p2:mCBP film measured with picosecond pulsed excitation at 375 nm. The blue line in (B) shows the fit of the transient PL decay to Eq. (2) in 'Methods' in the main text.

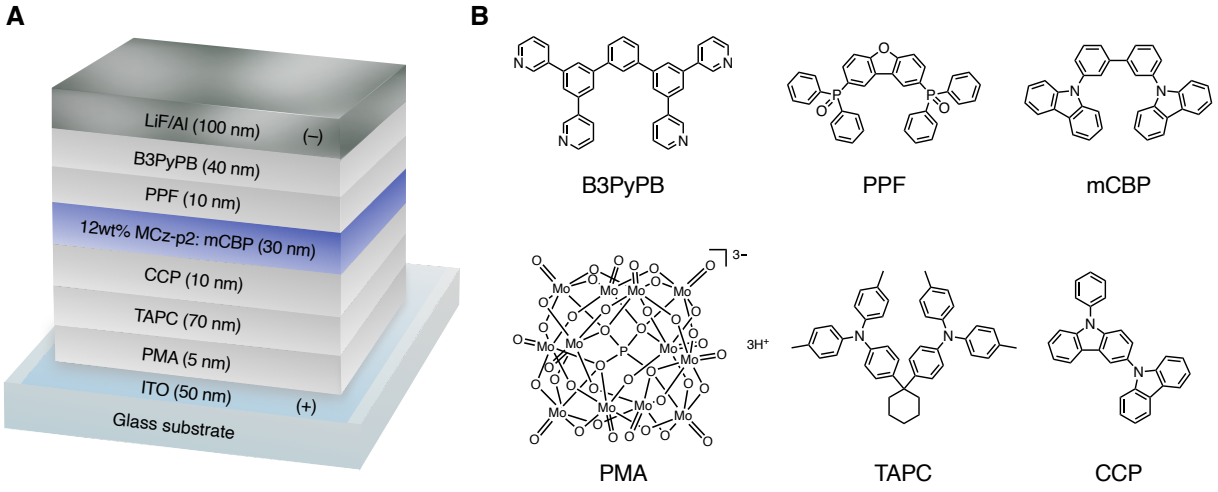


Fig. S5. OLED structure and molecular structures. (**A**) Device structure of the fabricated OLEDs. (**B**) Molecular structures of relevant materials.

Table S1. Experimental emission properties of a 12wt%-MCz-p2:mCBP fim

λ_{PL} (nm)[a]	Φ_{PL} (%)[b]	τ_{PF} (ns)[c]	τ_{DF} (ns)[d]	k_r (s^{-1})[e]	k_{nr} (s^{-1})[f]	k_{ISC} (s^{-1})[g]	k_{RISC} (s^{-1})[h]	ΔE_{ST}[i] (eV)
495	78	1.4	816	7.4×10^6	2.1×10^6	6.1×10^8	9.2×10^7	0.021

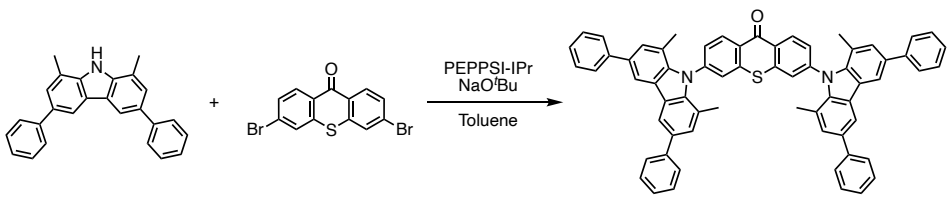
[a]Photoluminescence (PL) peak wavelength. [b]PL quantum yield. [c]Time constant of prompt fluorescence. [d]Time constant of delayed fluorescence. [e]Rate constant of radiative decay of the S_1 state to the S_0 state. [f]Rate constant of non-radiative decay of the S_1 state to the S_0 state. [g]Rate constant of intersystem crossing (ISC) of the S_1 state to the T_1 state. [h]Rate constant of reverse intersystem crossing (RISC) of the T_1 state to the S_1 state. [i]Energy gap between the S_1 and T_1 states, estimated from the k_{RISC}/k_{ISC} ratio, assuming the equilibrium between the S_1 state and the three T_1 sublevels.

2. Supplementary method and materials

^{1}H and ^{13}C NMR spectra were recorded on a Bruker Avance III HD. The chemical shifts (δ in ppm) were determined using tetramethylsilane as an internal reference. Matrix-assisted laser desorption ionization time-of-flight (MALDI-TOF) mass spectrometry was performed on a Bruker Autoflex III in the reflector mode using dithranol as a matrix. Commercially available reagents and solvents were used as received unless otherwise noted. 2,4,5,6-Tetra(carbazol-9-yl)isophthalonitrile (4CzIPN) was purchased from Luminescence Technology Corporation. Phosphomolybdic acid (PMA) and 1,1-bis(4-di-*p*-tolylaminophenyl)cyclohexane (TAPC) were purchased from Tokyo Chemical Industry. LiF and Al were purchased from Furuuchi Chemical. 9-Phenyl-3,9′-bicarbazole (CCP), 3,3′-bis(carbazol-9-yl)biphenyl (mCBP), 2,8-bis(diphenylphosphoryl)dibenzo[*b*,*d*]furan (PPF), and 1,3-bis[3,5-di(pyridine-3-yl)phenyl]benzene (B3PyPB) were prepared according to procedures described in the literature.

3. Supplementary synthesis

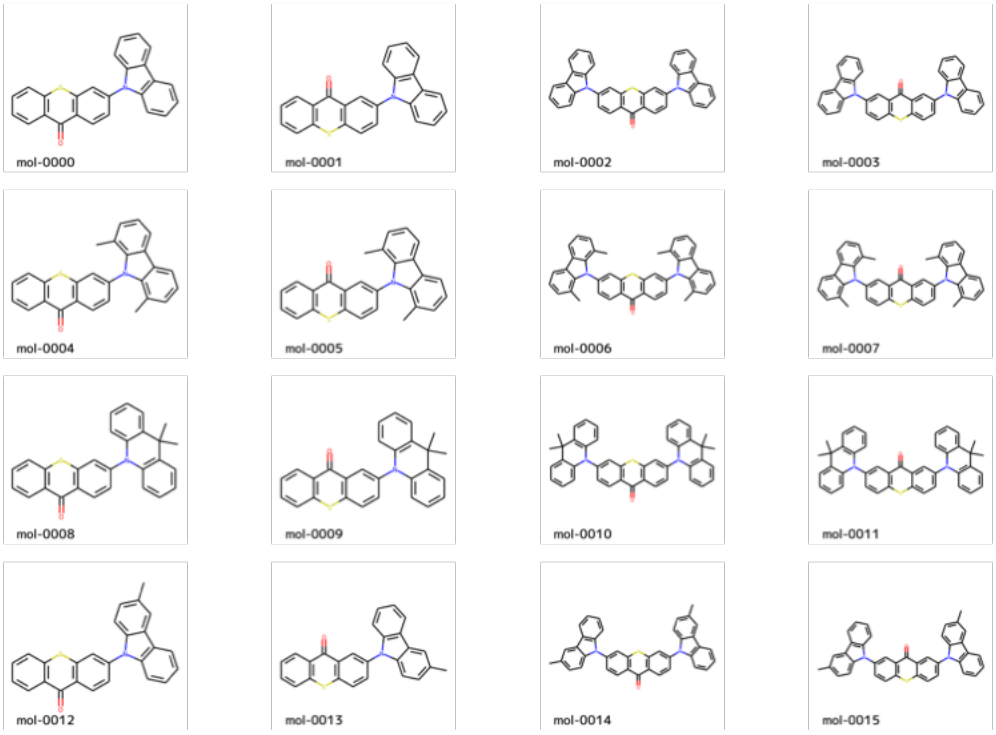
Scheme S1. Synthesis of MCz-p2. Palladium-catalyzed Buchwald–Hartwig amination of 3,6-dibromothioxanthone with 1,8-dimethyl-3,6-diphenyl-9*H*-carbazole.

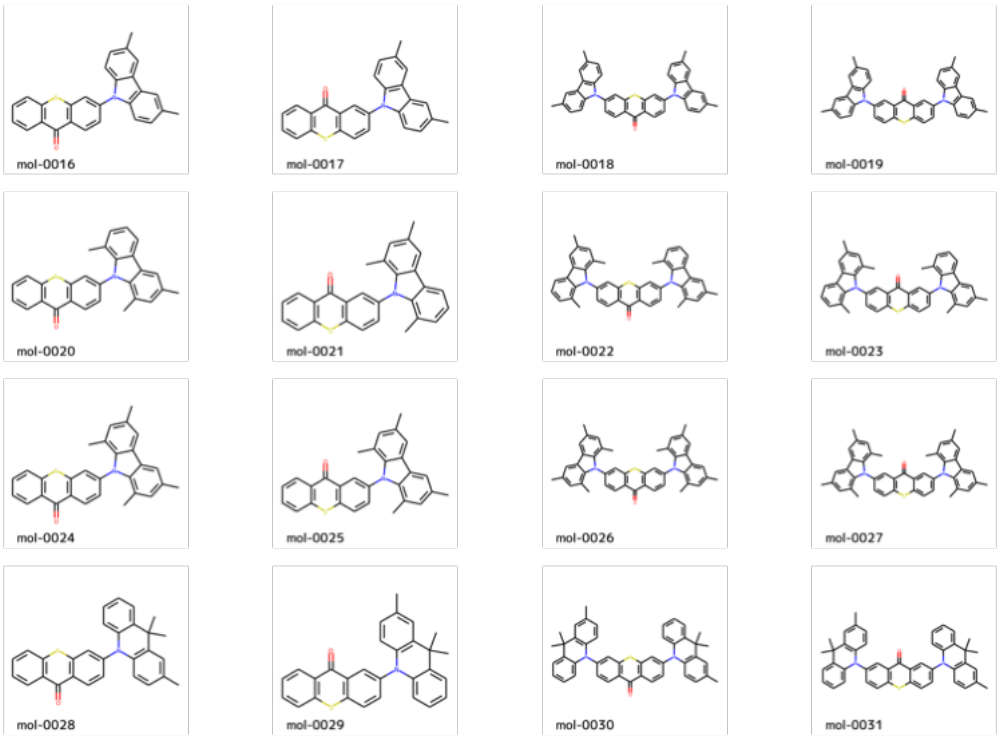


A mixture of 1,8-dimethyl-3,6-diphenyl-9*H*-carbazole (0.35 g, 1.0 mmol), 3,6-dibromothioxanthone (0.17 g, 0.46 mmol), PEPPSI-IPr (0.04 g, 0.05 mmol), and Sodium *t*-butoxide (0.15 g, 1.6 mmol) in dry toluene (15 mL) was refluxed for 36 hours. After cooling to room temperature, the reaction mixture was poured into water and extracted with $CHCl_3$. The combined organic layers were concentrated under reduced pressure. The crude product was purified by silica-gel column chromatography (eluent: $CHCl_3$/*n*-hexane = 1:2, v/v) to afford MCz-p2 as a yellow solid (0.30 g, 72%). ^{1}H NMR (600 MHz, $CDCl_3$): δ 8.84 (d, J = 8.4 Hz, 2H), 8.27 (s, 4H), 7.81 (s, 2H), 7.78 (d, J = 9.0 Hz, 2H), 7.72 (d, J = 7.9 Hz, 8H), 7.48 (t, J = 7.7 Hz, 8H), 7.41 (s, 4H), 7.35 (t, J = 7.4 Hz, 4H), 2.06 (s, 12H). ^{13}C NMR (150 MHz, $CDCl_3$): δ 178.88, 146.24, 141.53, 140.64, 137.16, 134.16, 130.47, 129.94, 129.86, 128.93, 128.78, 128.33, 127.26, 126.73, 125.21, 121.70, 116.66, 20.07. MS (MALDI-TOF): *m*/*z* 902.33355 $[M]^+$; calcd. for $C_{65}H_{46}N_2OS$ 902.33308, error = 2.68 ppm.

4. Supplementary note

The virtual search space of 1.4 thousand molecules is listed below. All molecules share a common thioxanthone acceptor unit incorporate diverse donor units.

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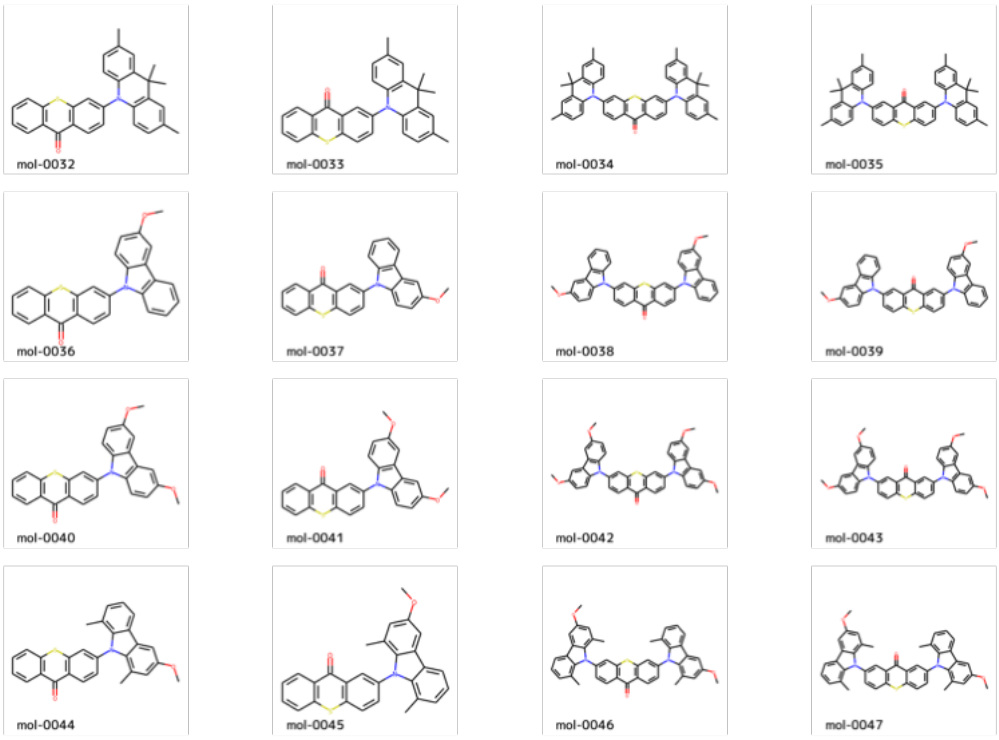
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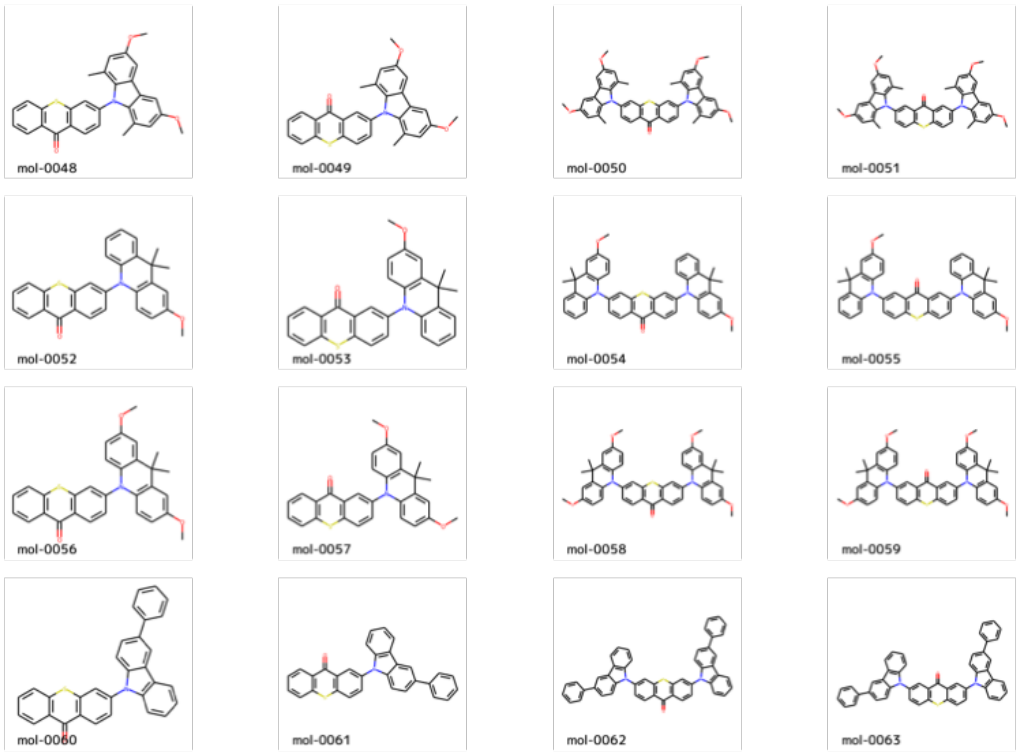
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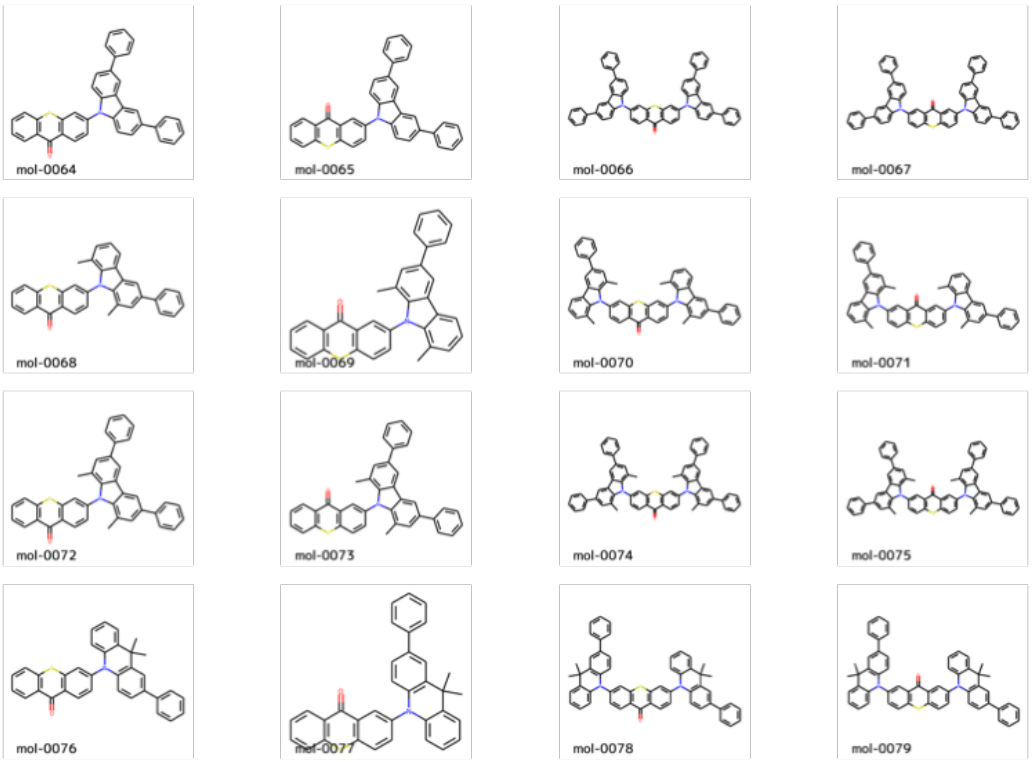
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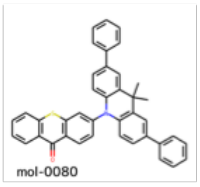
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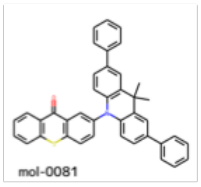
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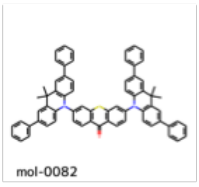
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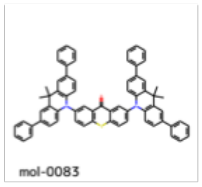
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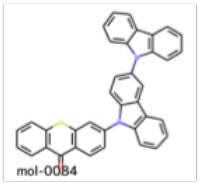
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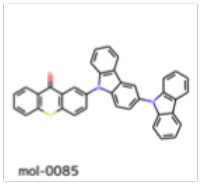
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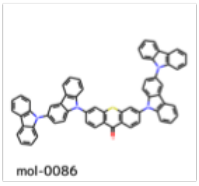
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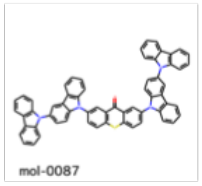
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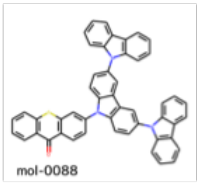
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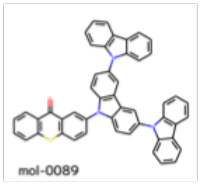
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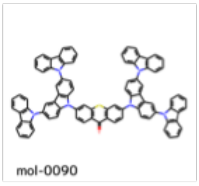
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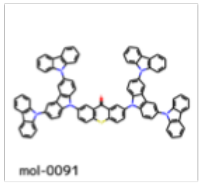
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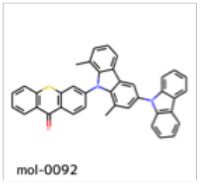
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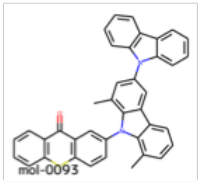
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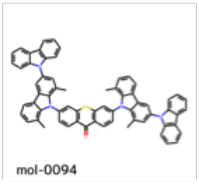
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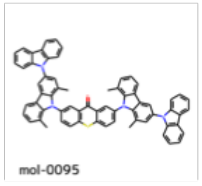
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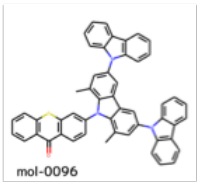
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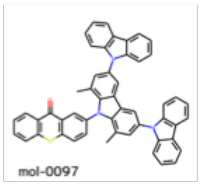
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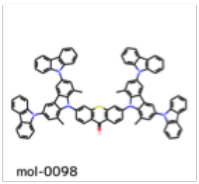
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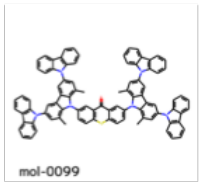
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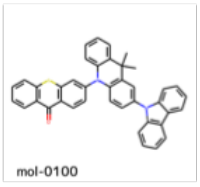
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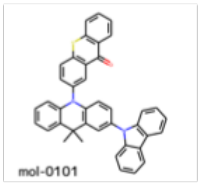
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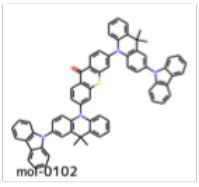
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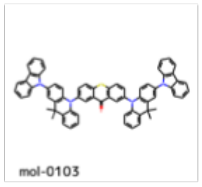
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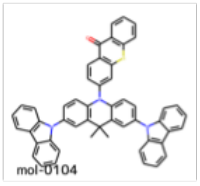
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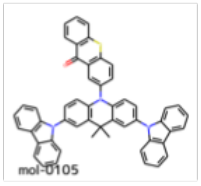
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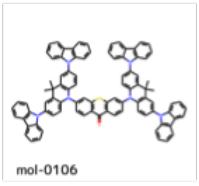
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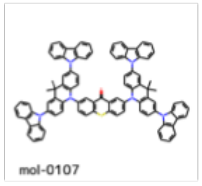
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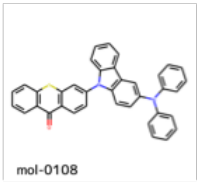
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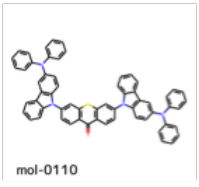
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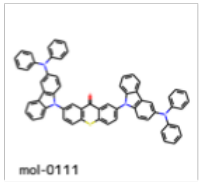
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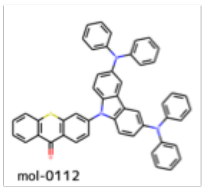
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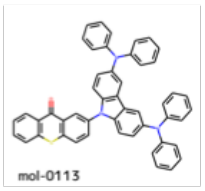
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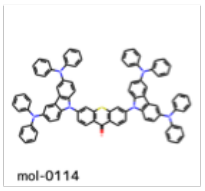
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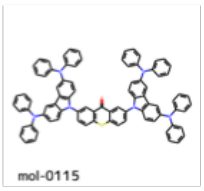
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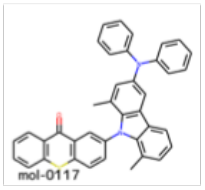
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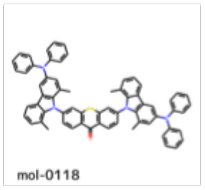
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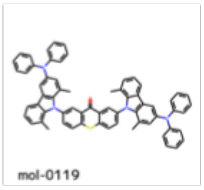
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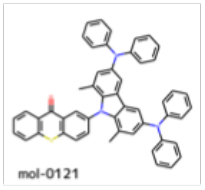
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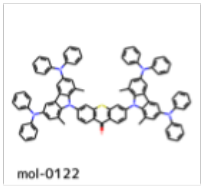
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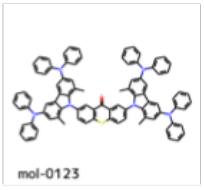
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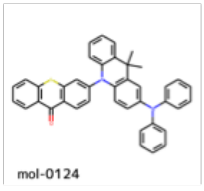
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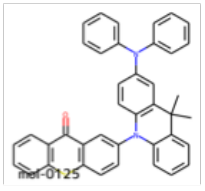
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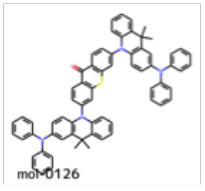
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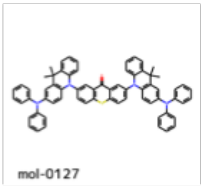
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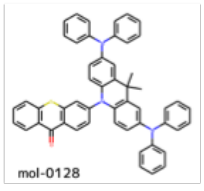
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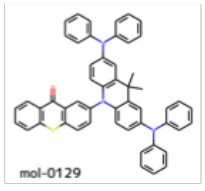
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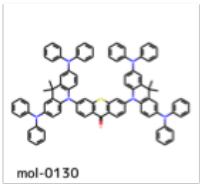
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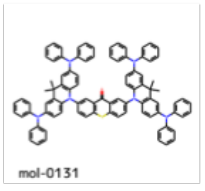
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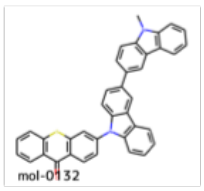
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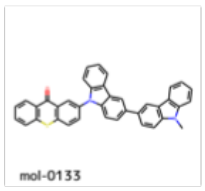
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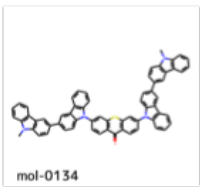
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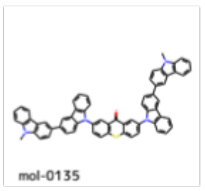
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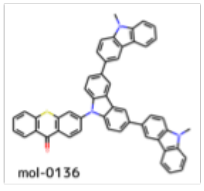
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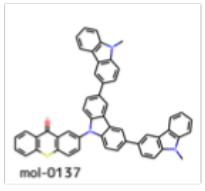
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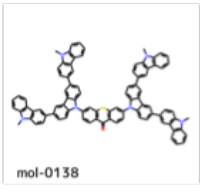
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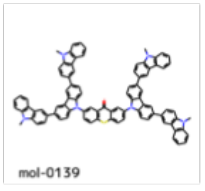
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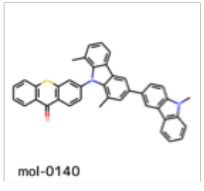
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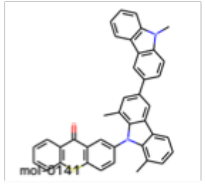
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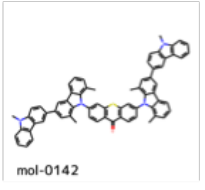
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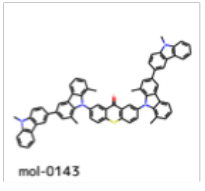
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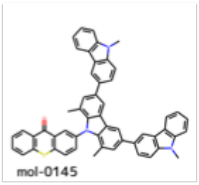
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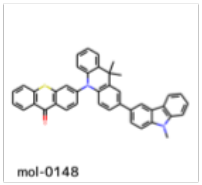
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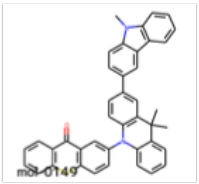
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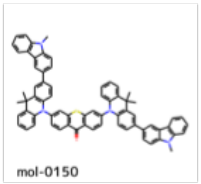
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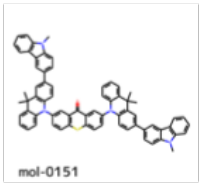
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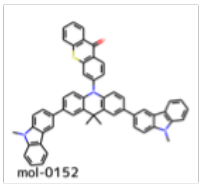
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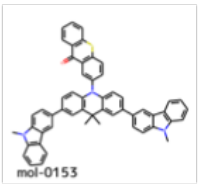
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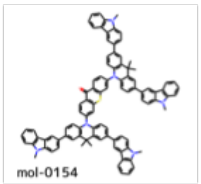
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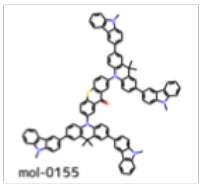
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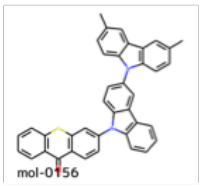
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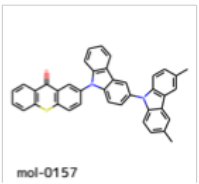
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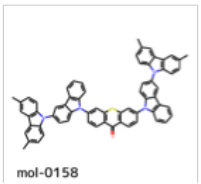
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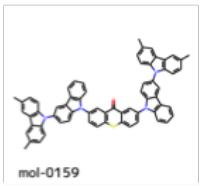
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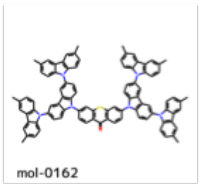
mol-0160


mol-0161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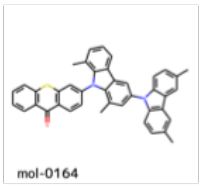
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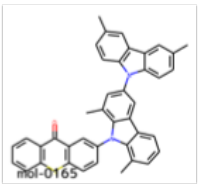
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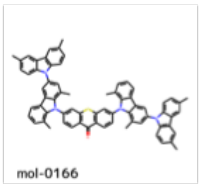
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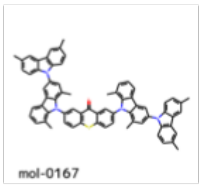
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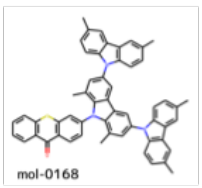
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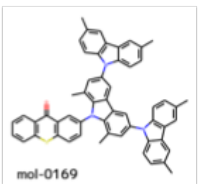
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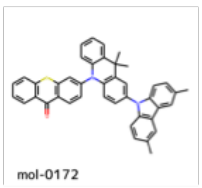
mol-0170


mol-0171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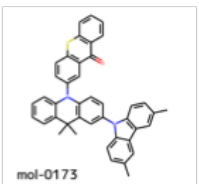
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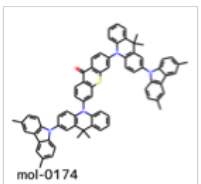
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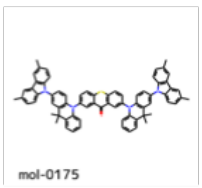
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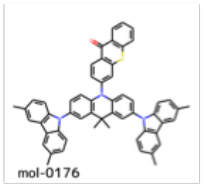
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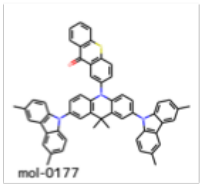
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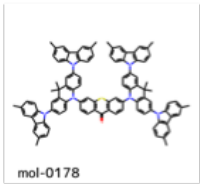
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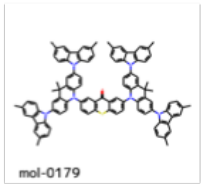
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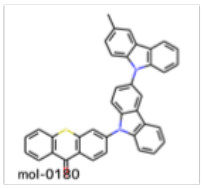
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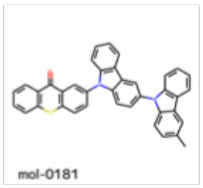
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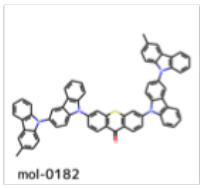
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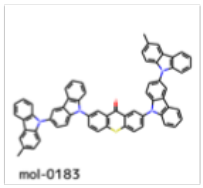
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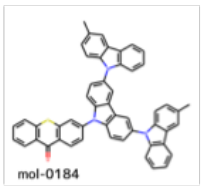
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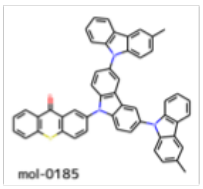
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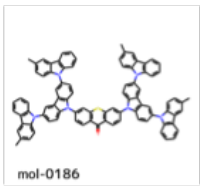
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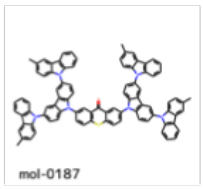
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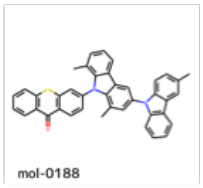
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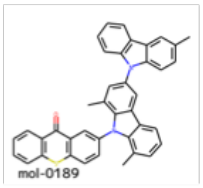
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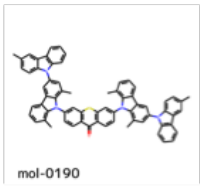
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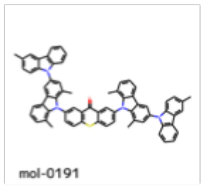
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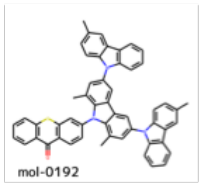
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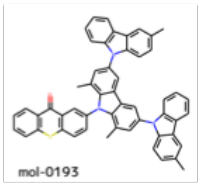
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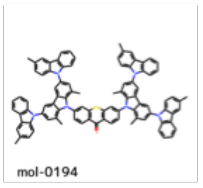
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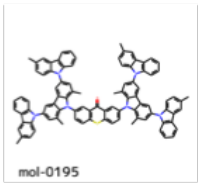
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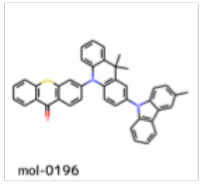
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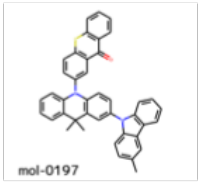
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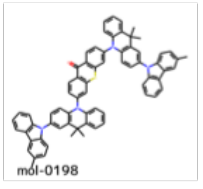
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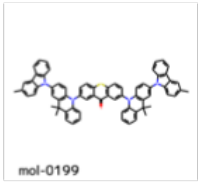
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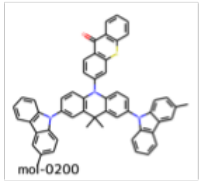
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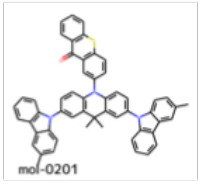
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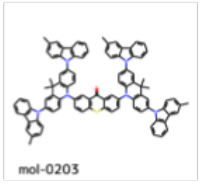
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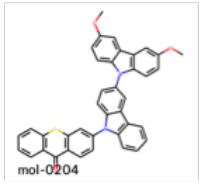
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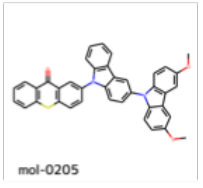
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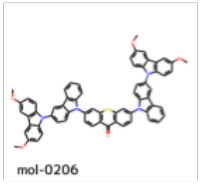
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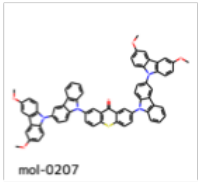
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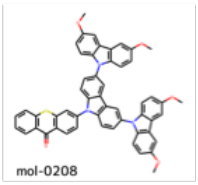
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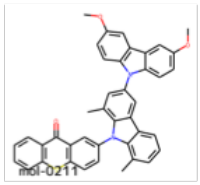
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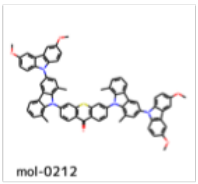
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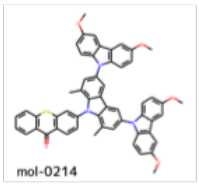
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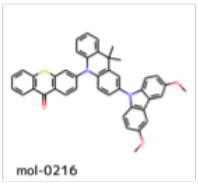
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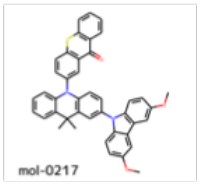
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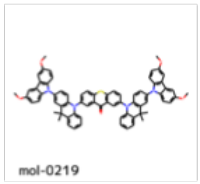
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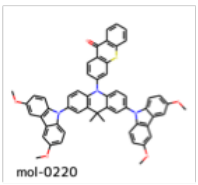
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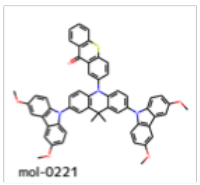
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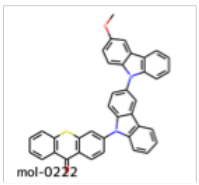
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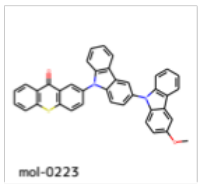
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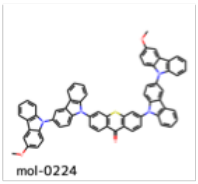
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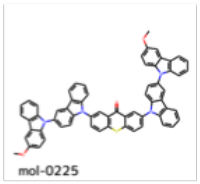
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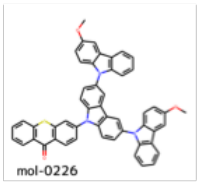
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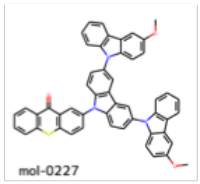
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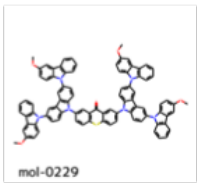
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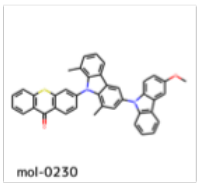
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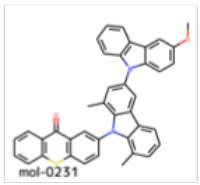
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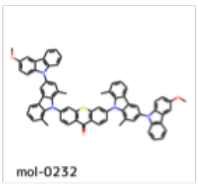
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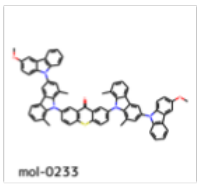
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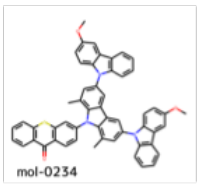
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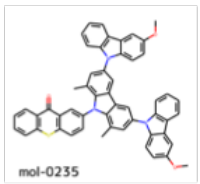
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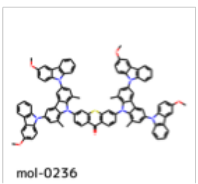
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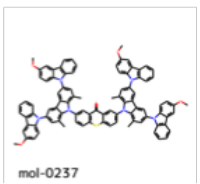
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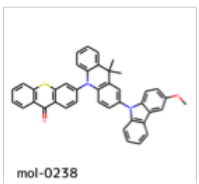
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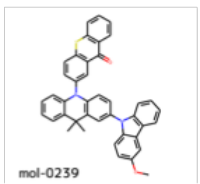
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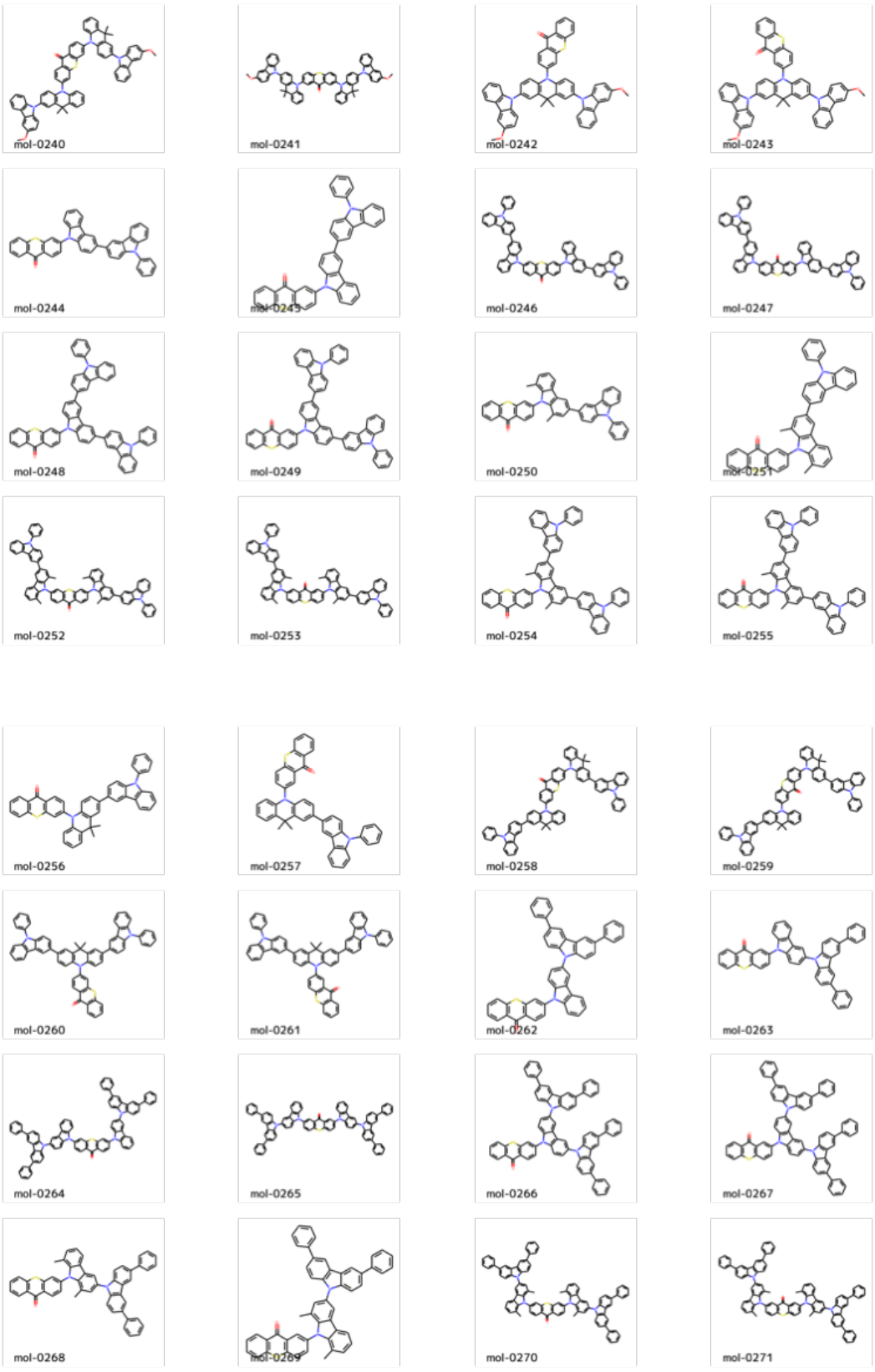
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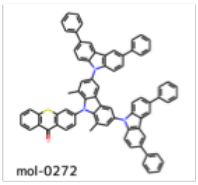
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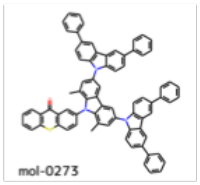
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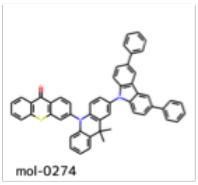
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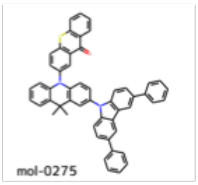
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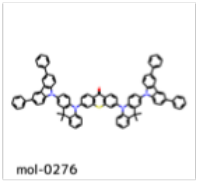
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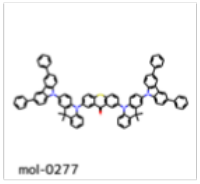
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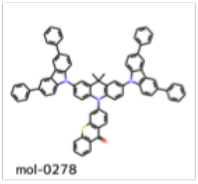
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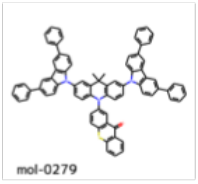
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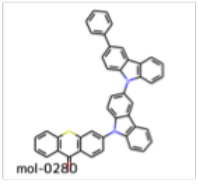
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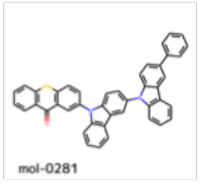
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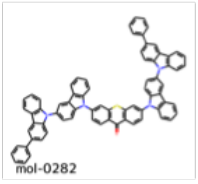
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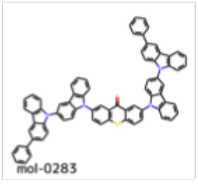
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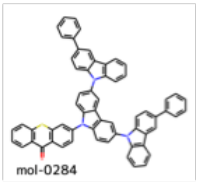
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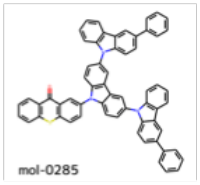
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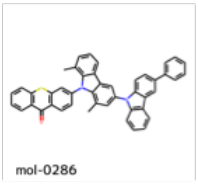
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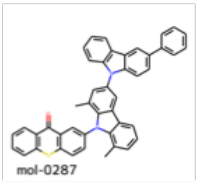
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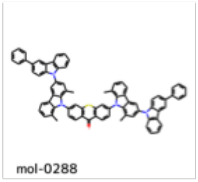
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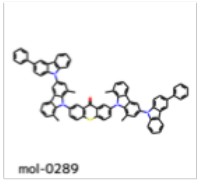
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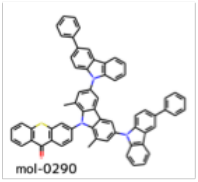
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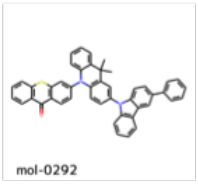
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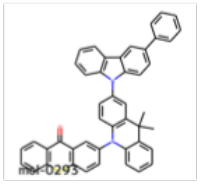
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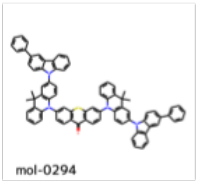
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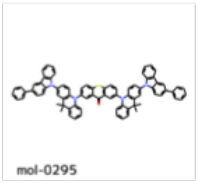
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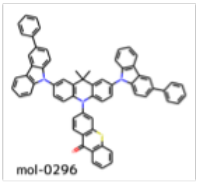
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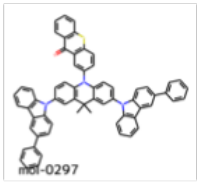
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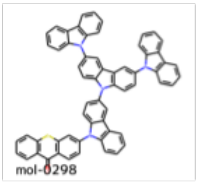
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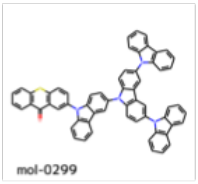
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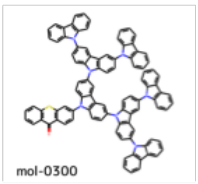
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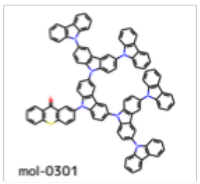
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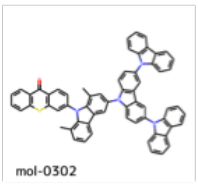
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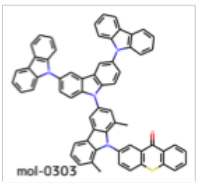
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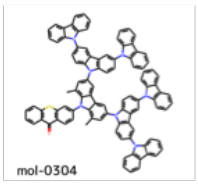
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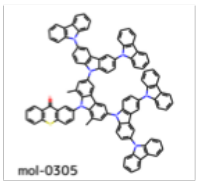
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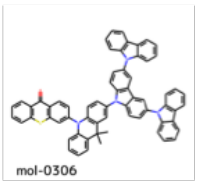
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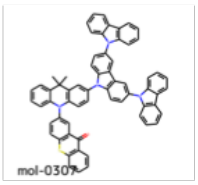
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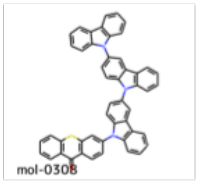
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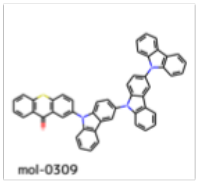
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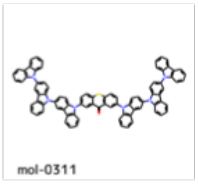
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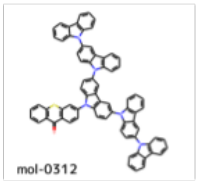
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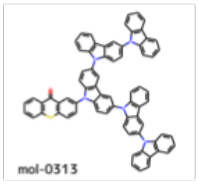
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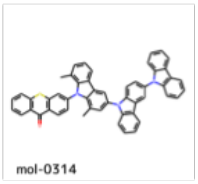
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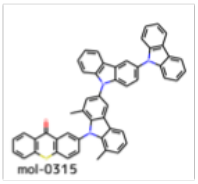
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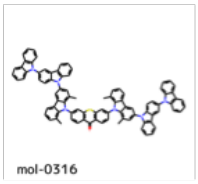
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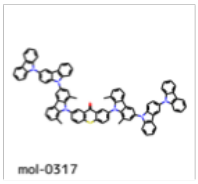
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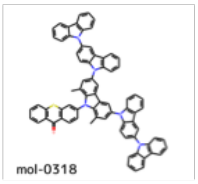
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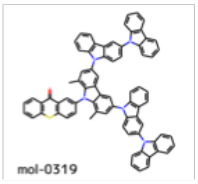
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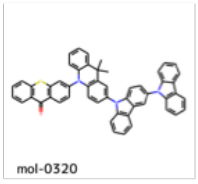
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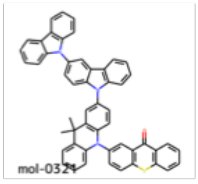
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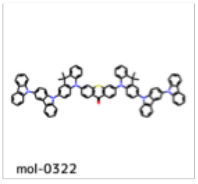
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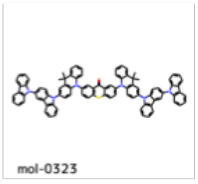
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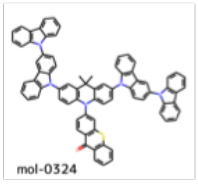
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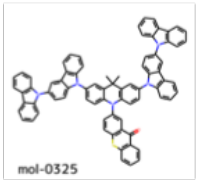
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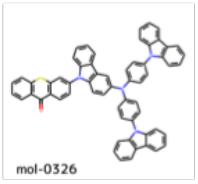
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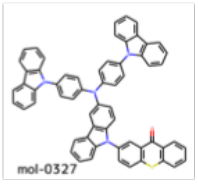
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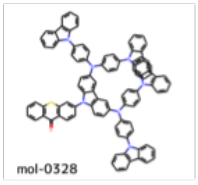
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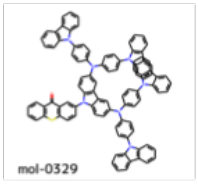
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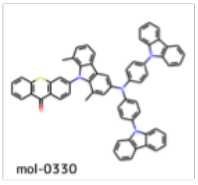
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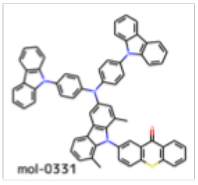
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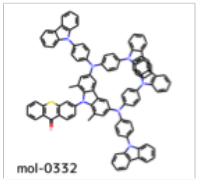
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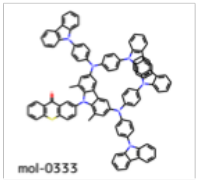
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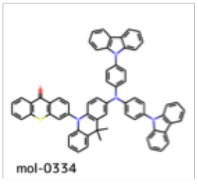
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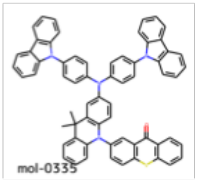
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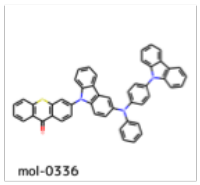
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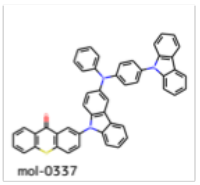
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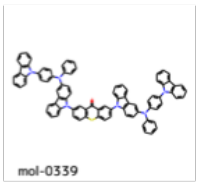
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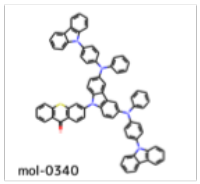
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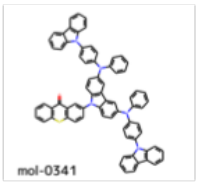
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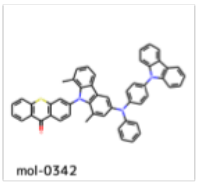
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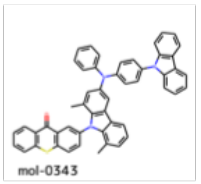
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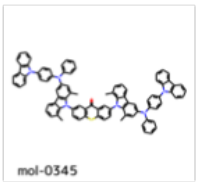
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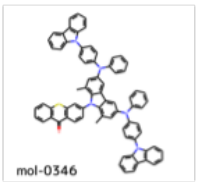
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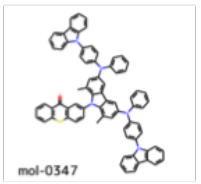
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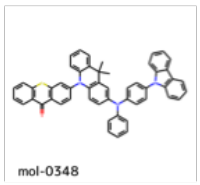
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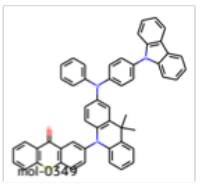
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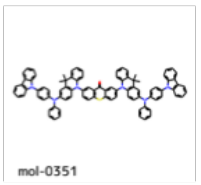
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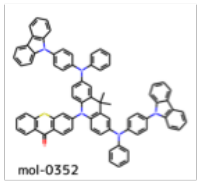
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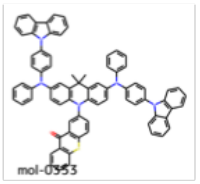
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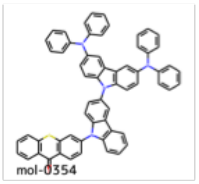
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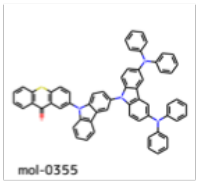
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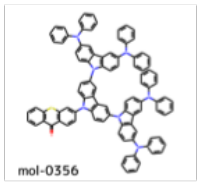
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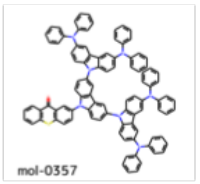
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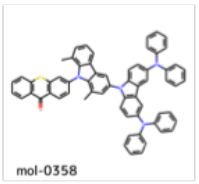
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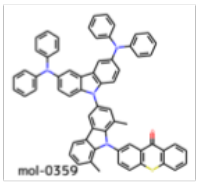
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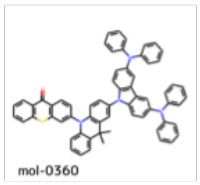
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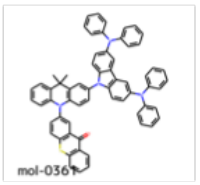
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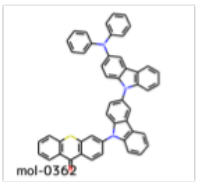
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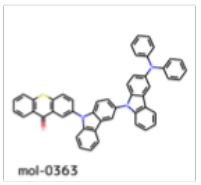
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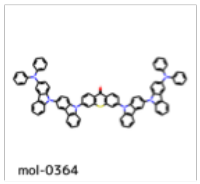
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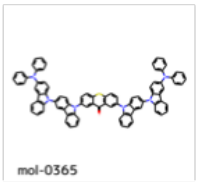
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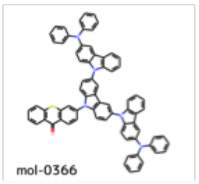
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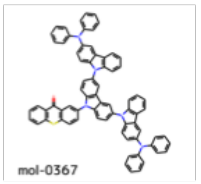
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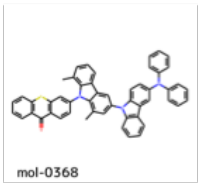
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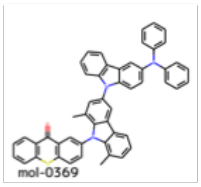
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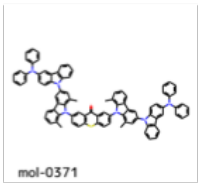
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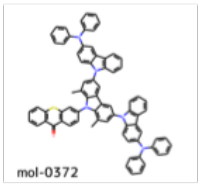
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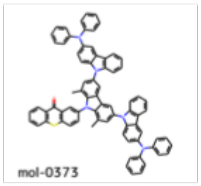
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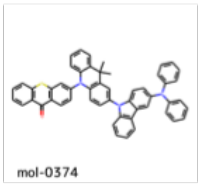
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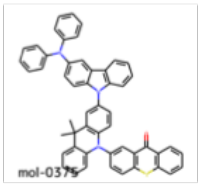
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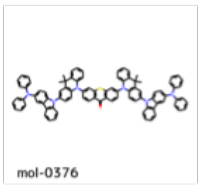
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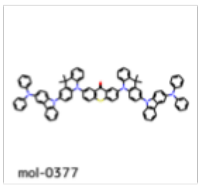
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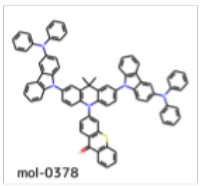
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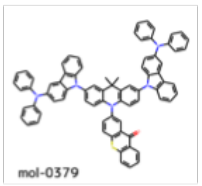
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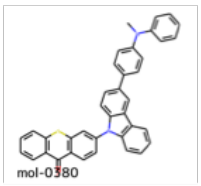
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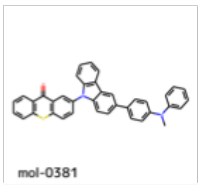
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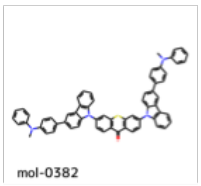
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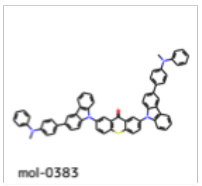
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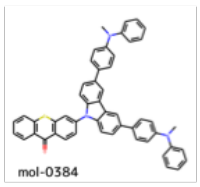
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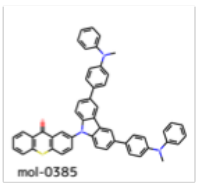
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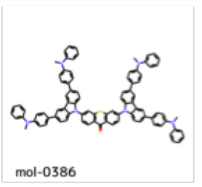
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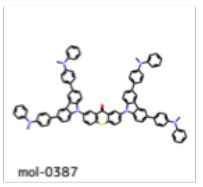
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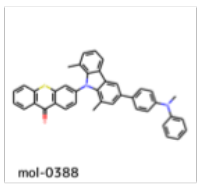
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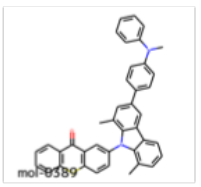
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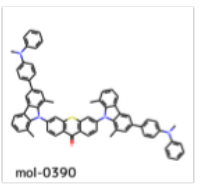
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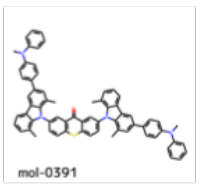
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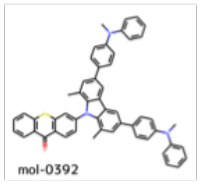
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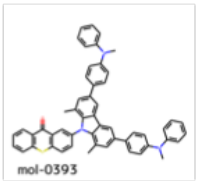
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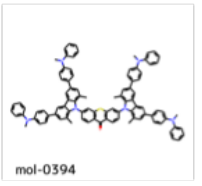
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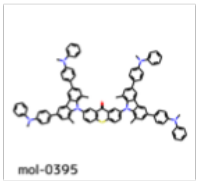
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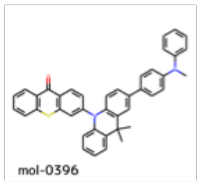
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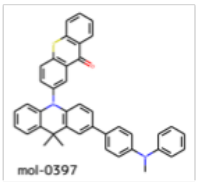
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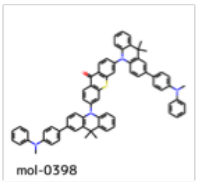
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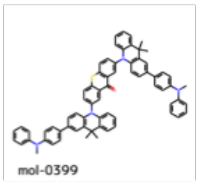
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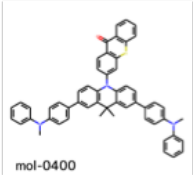
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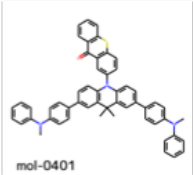
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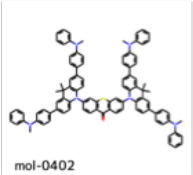
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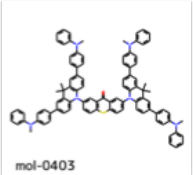
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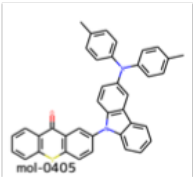
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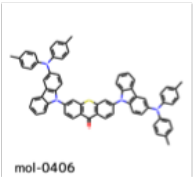
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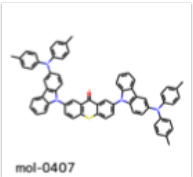
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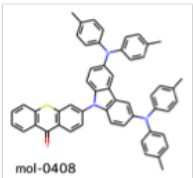
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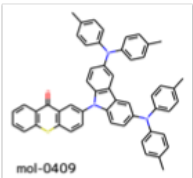
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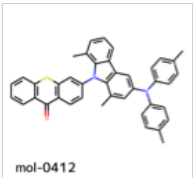
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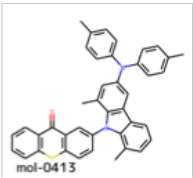
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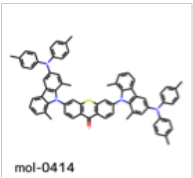
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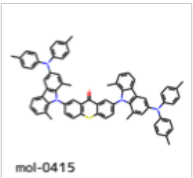
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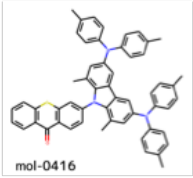
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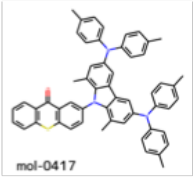
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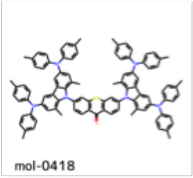
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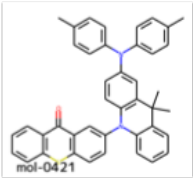
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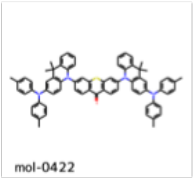
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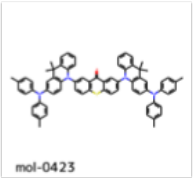
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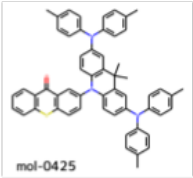
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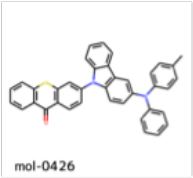
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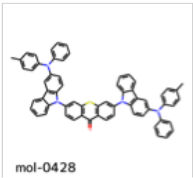
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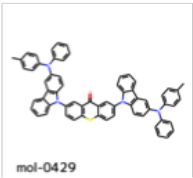
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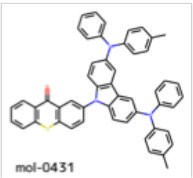
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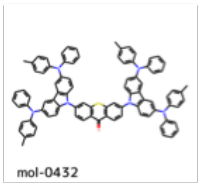
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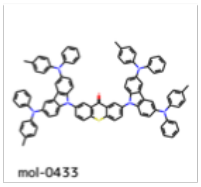
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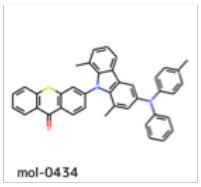
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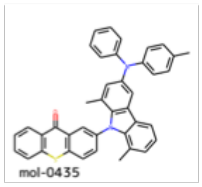
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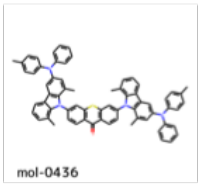
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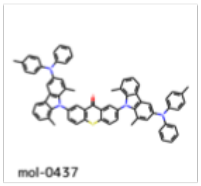
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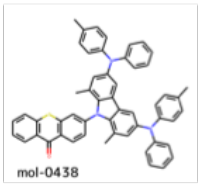
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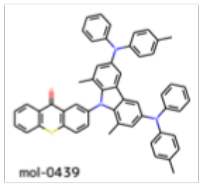
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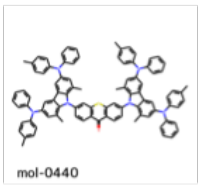
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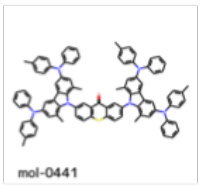
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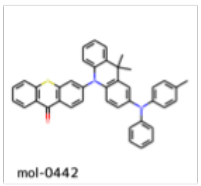
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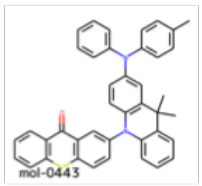
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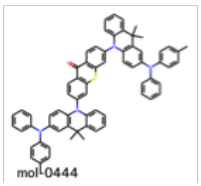
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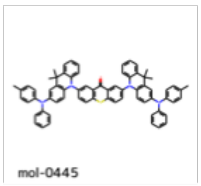
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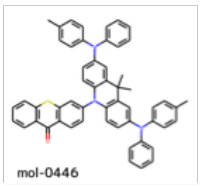
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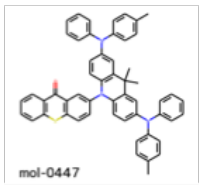
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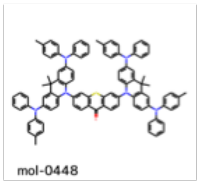
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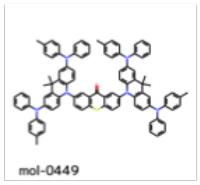
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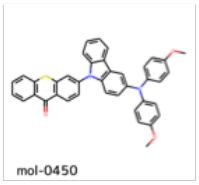
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mol-0451


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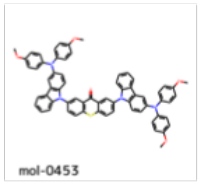
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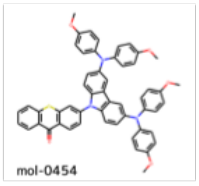
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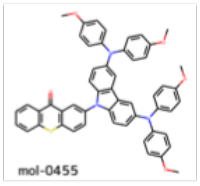
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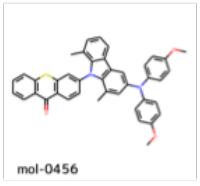
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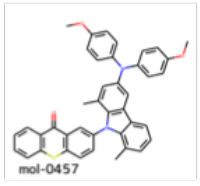
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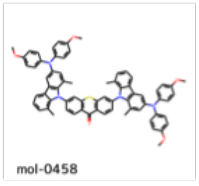
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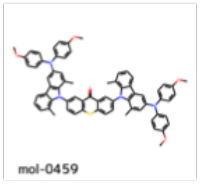
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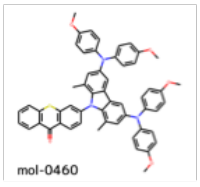
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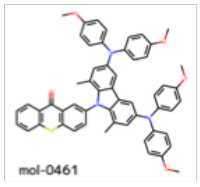
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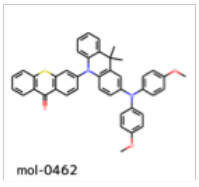
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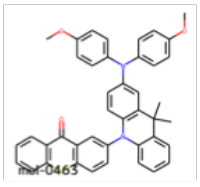
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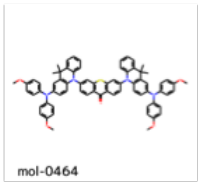
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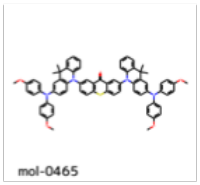
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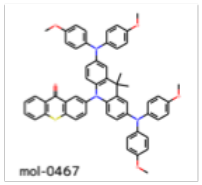
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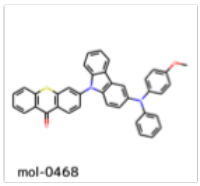
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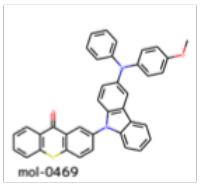
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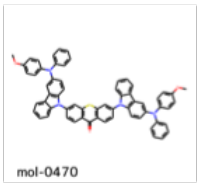
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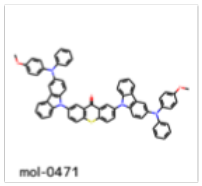
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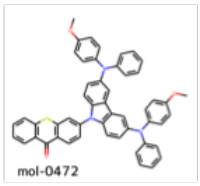
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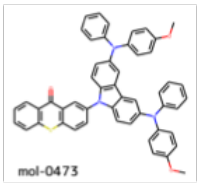
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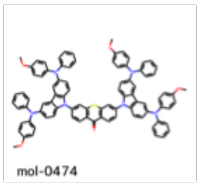
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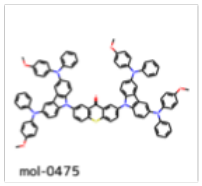
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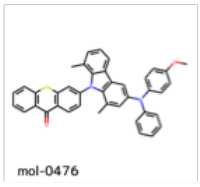
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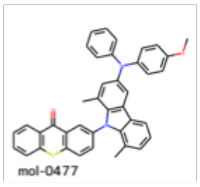
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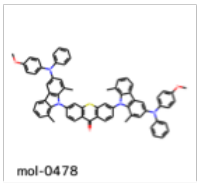
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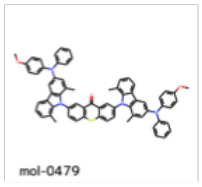
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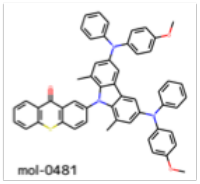
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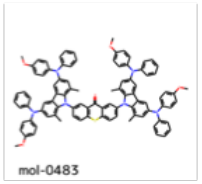
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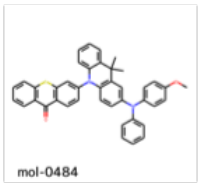
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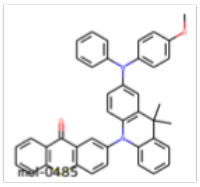
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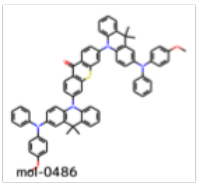
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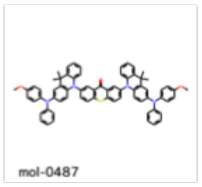
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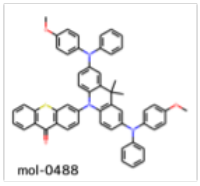
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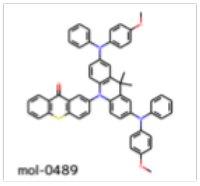
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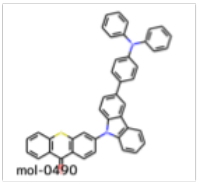
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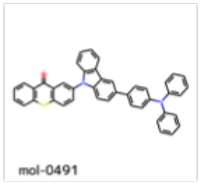
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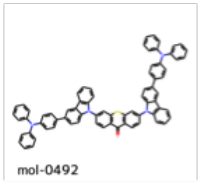
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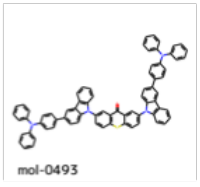
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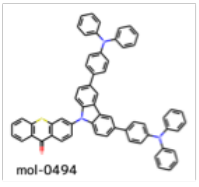
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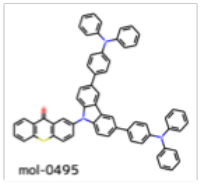
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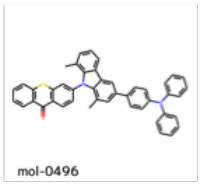
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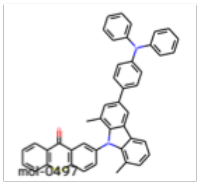
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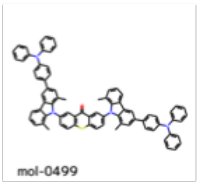
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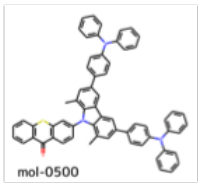
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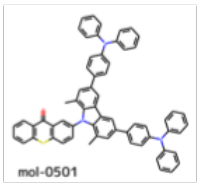
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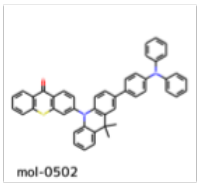
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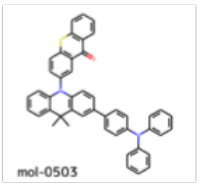
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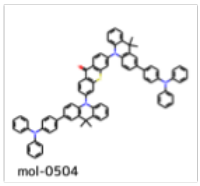
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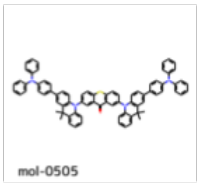
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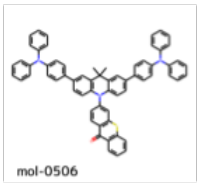
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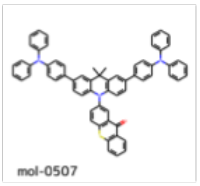
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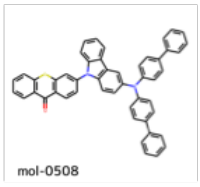
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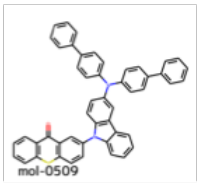
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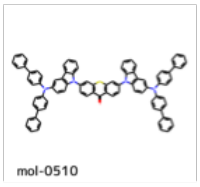
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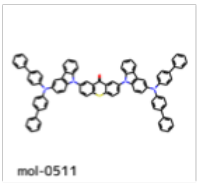
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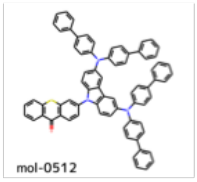
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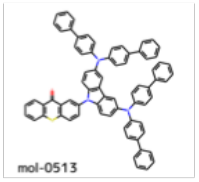
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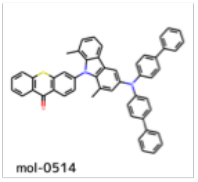
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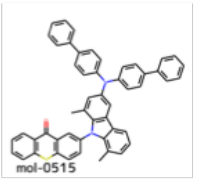
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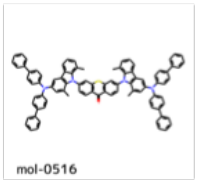
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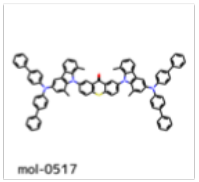
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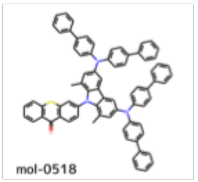
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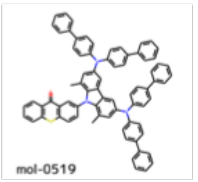
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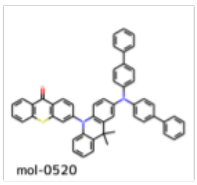
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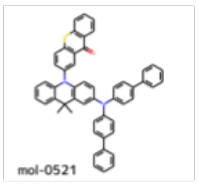
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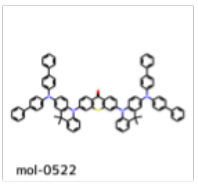
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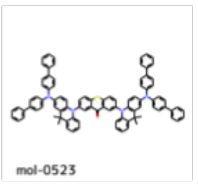
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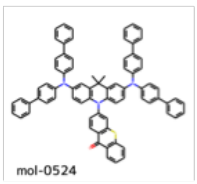
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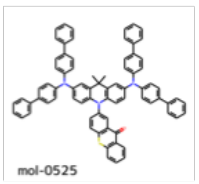
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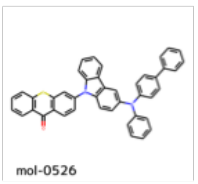
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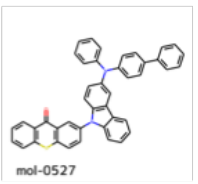
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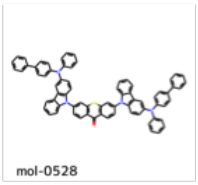
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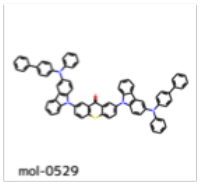
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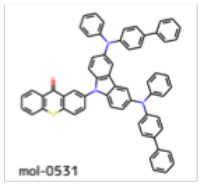
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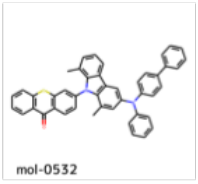
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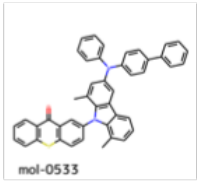
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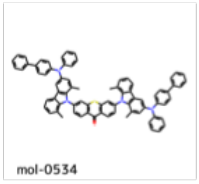
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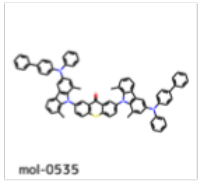
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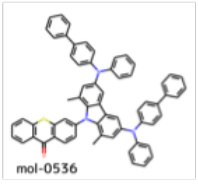
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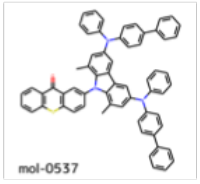
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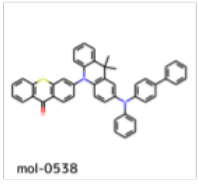
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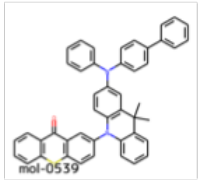
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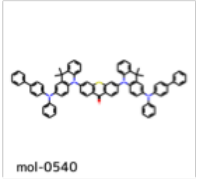
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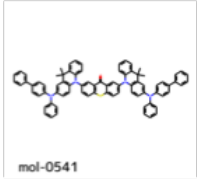
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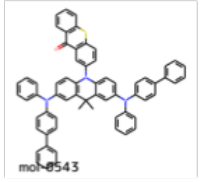
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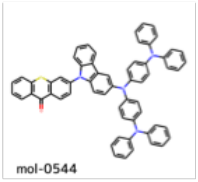
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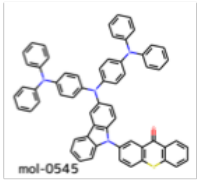
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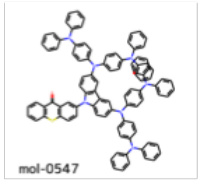
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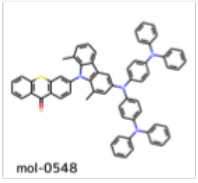
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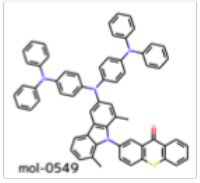
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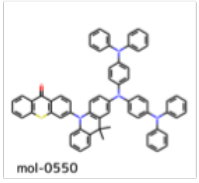
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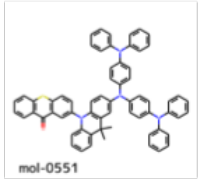
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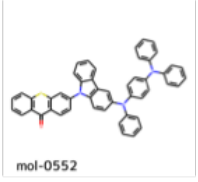
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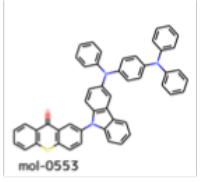
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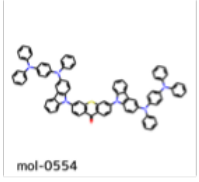
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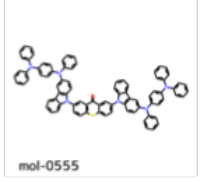
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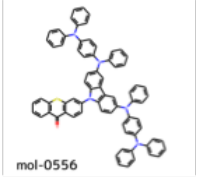
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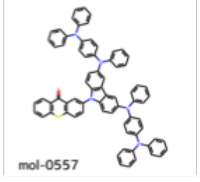
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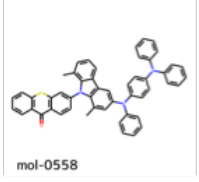
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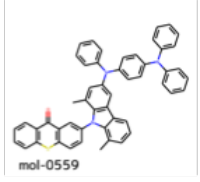
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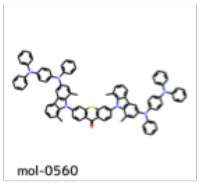
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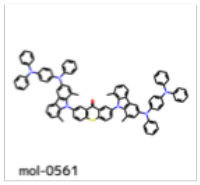
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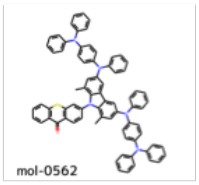
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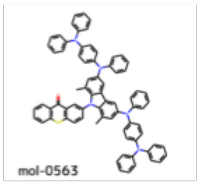
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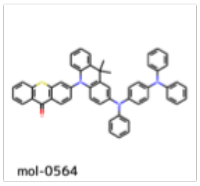
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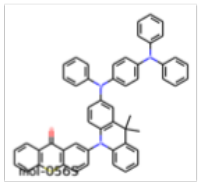
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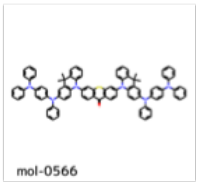
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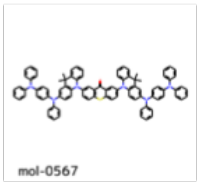
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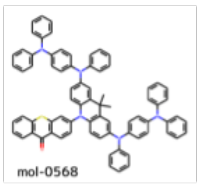
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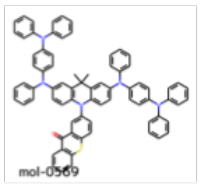
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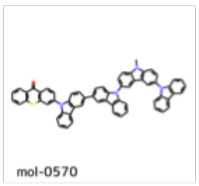
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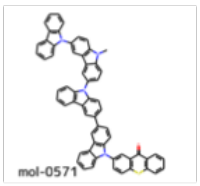
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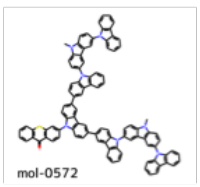
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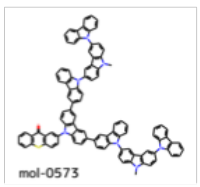
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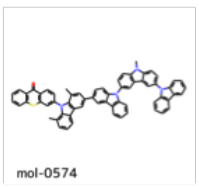
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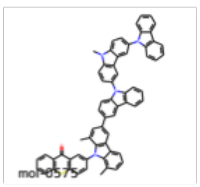
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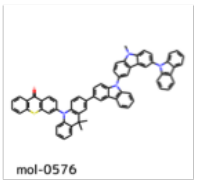
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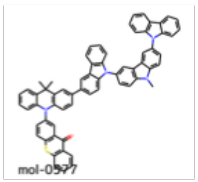
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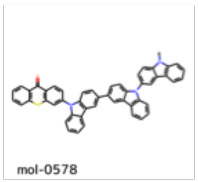
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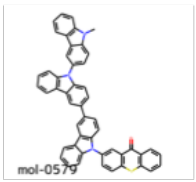
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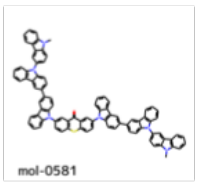
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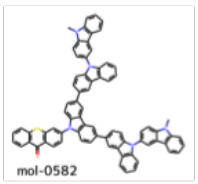
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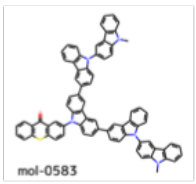
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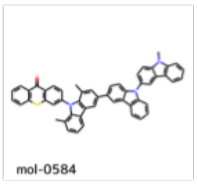
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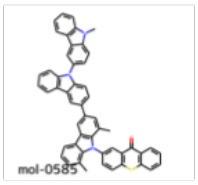
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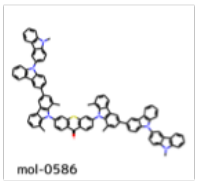
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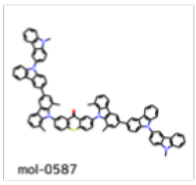
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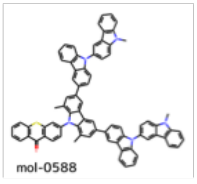
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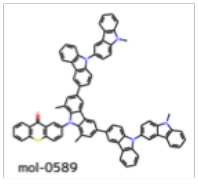
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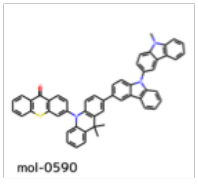
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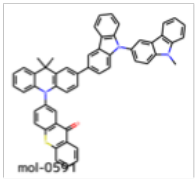
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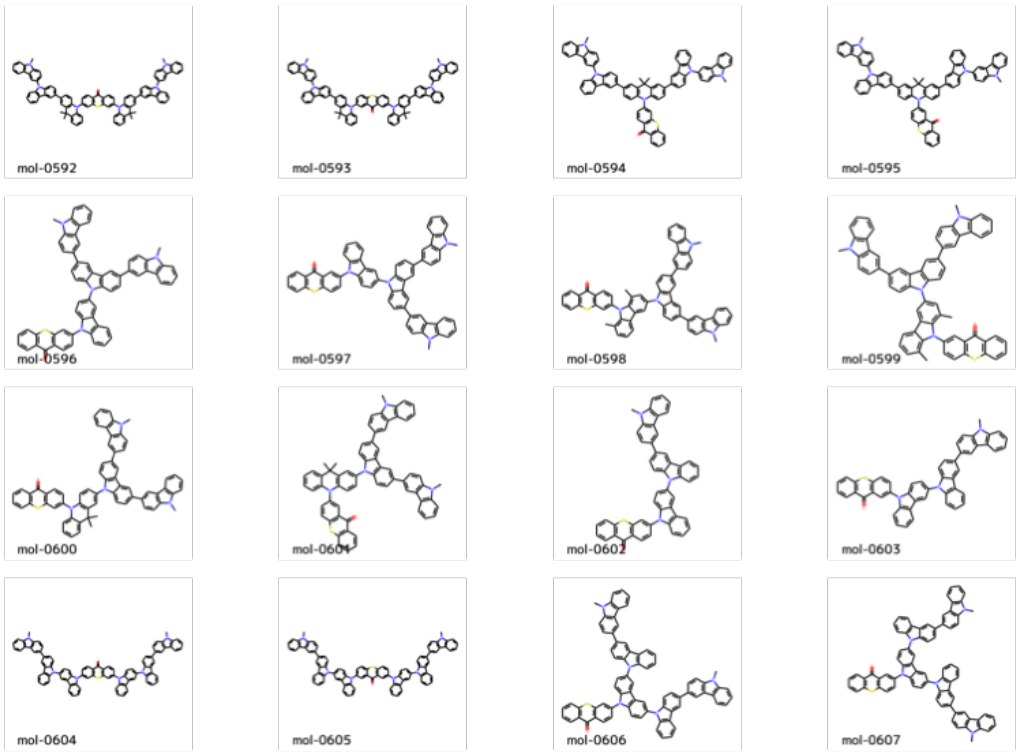
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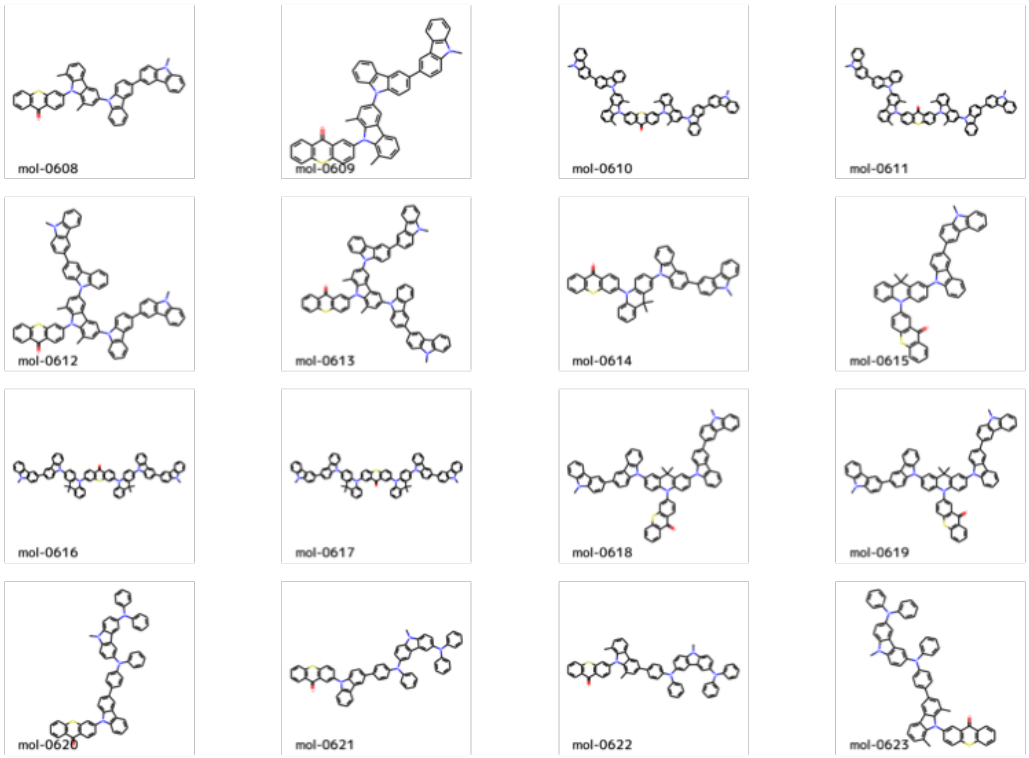
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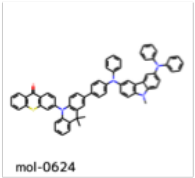
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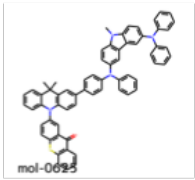
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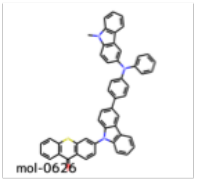
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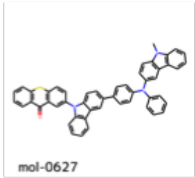
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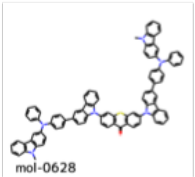
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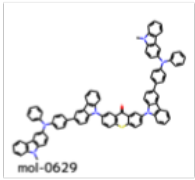
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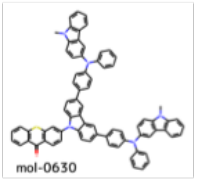
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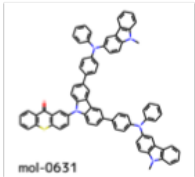
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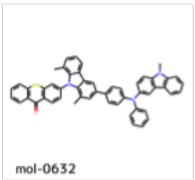
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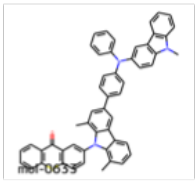
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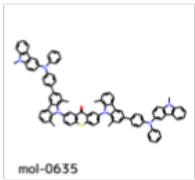
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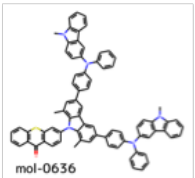
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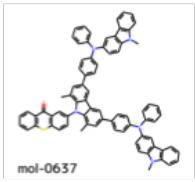
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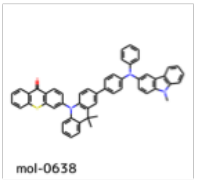
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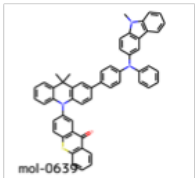
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mol-0640


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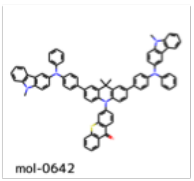
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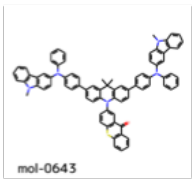
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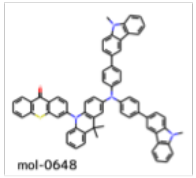
mol-0644


mol-0645


mol-0646


mol-0647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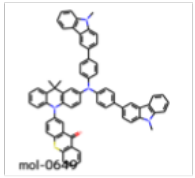
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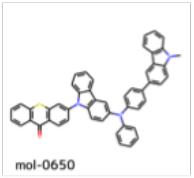
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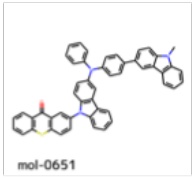
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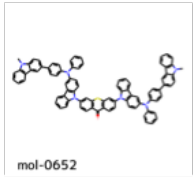
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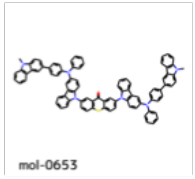
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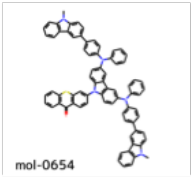
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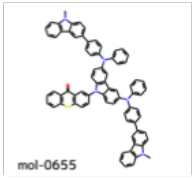
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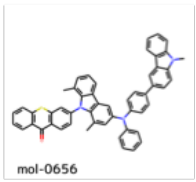
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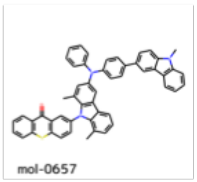
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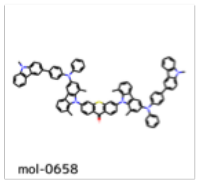
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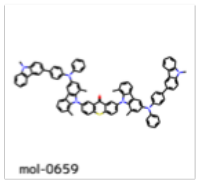
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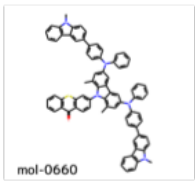
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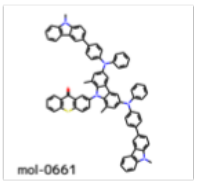
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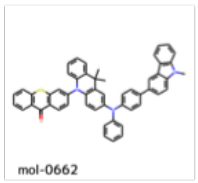
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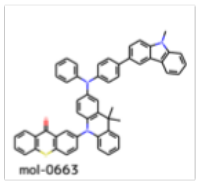
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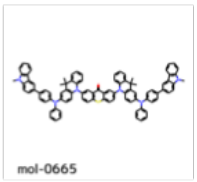
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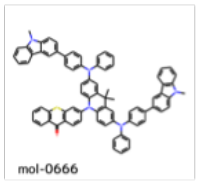
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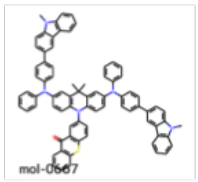
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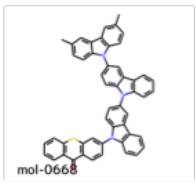
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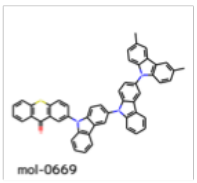
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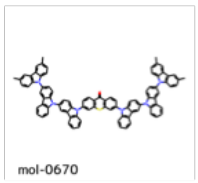
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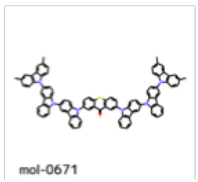
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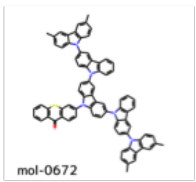
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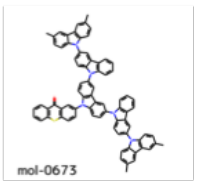
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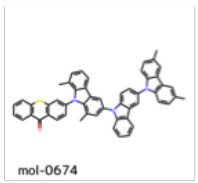
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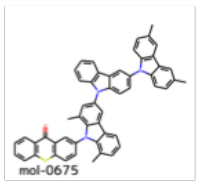
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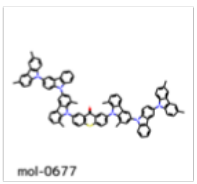
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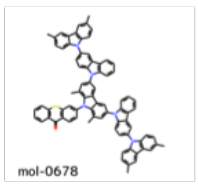
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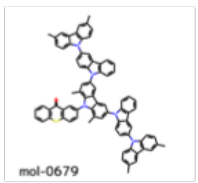
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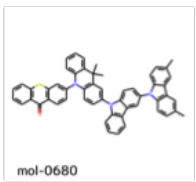
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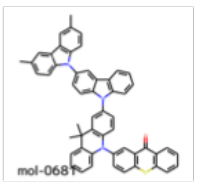
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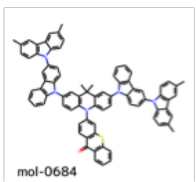
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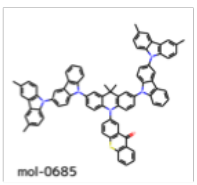
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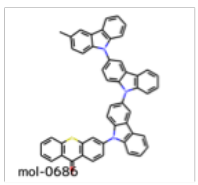
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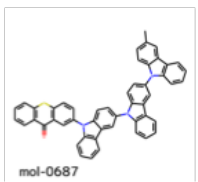
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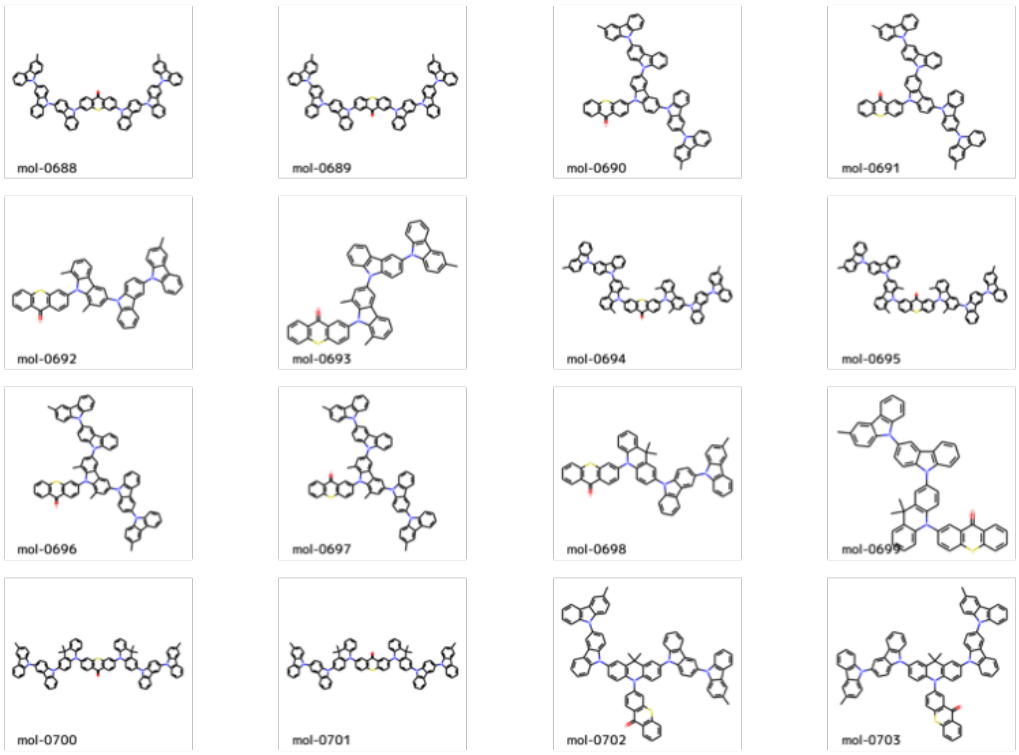
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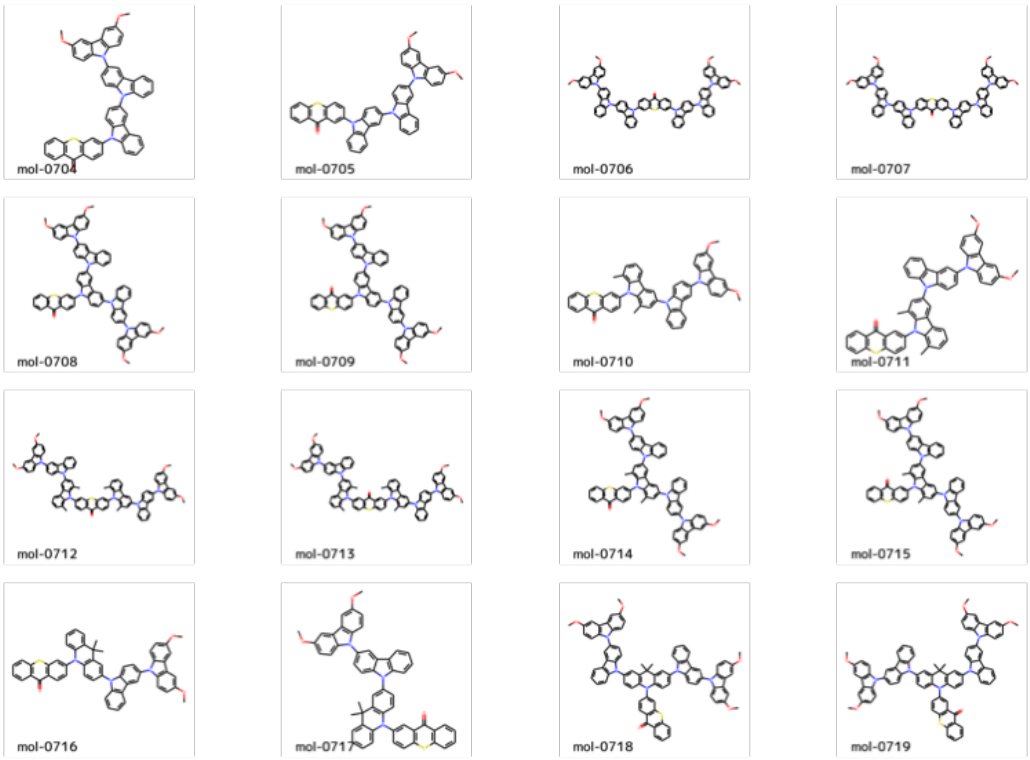
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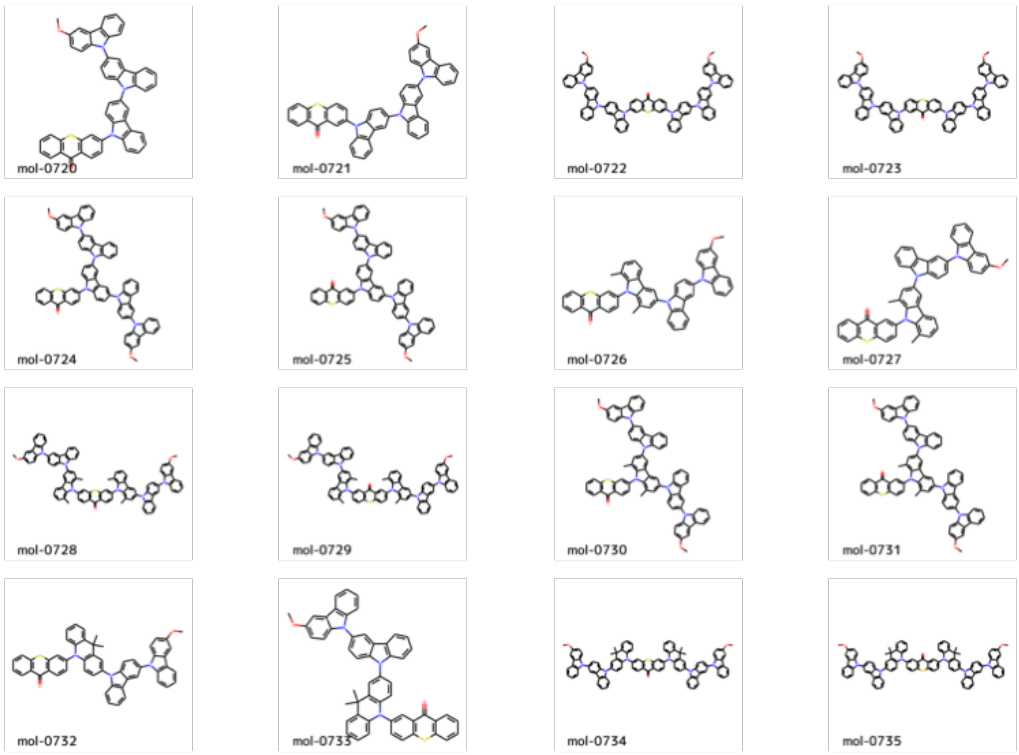
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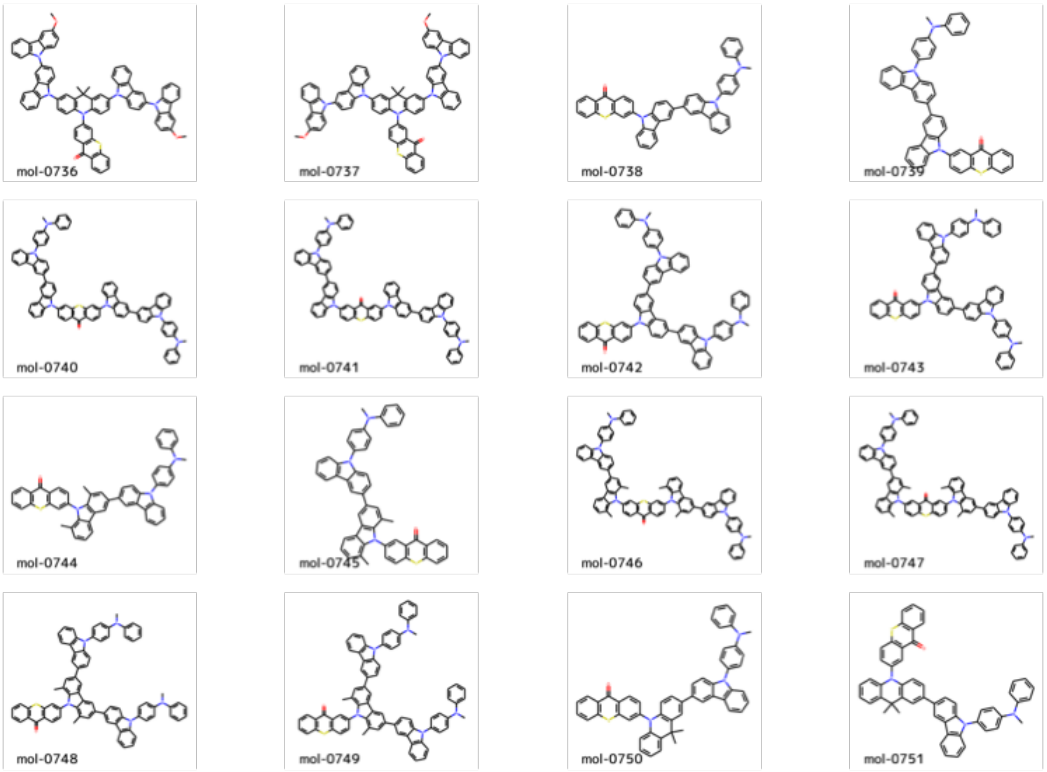
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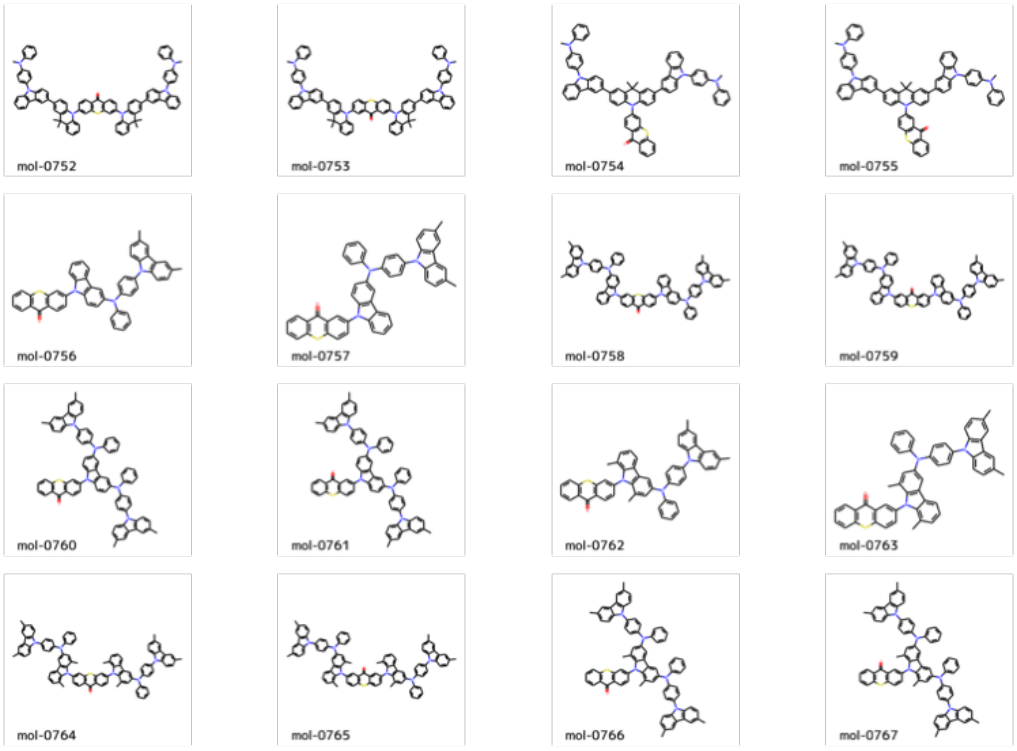
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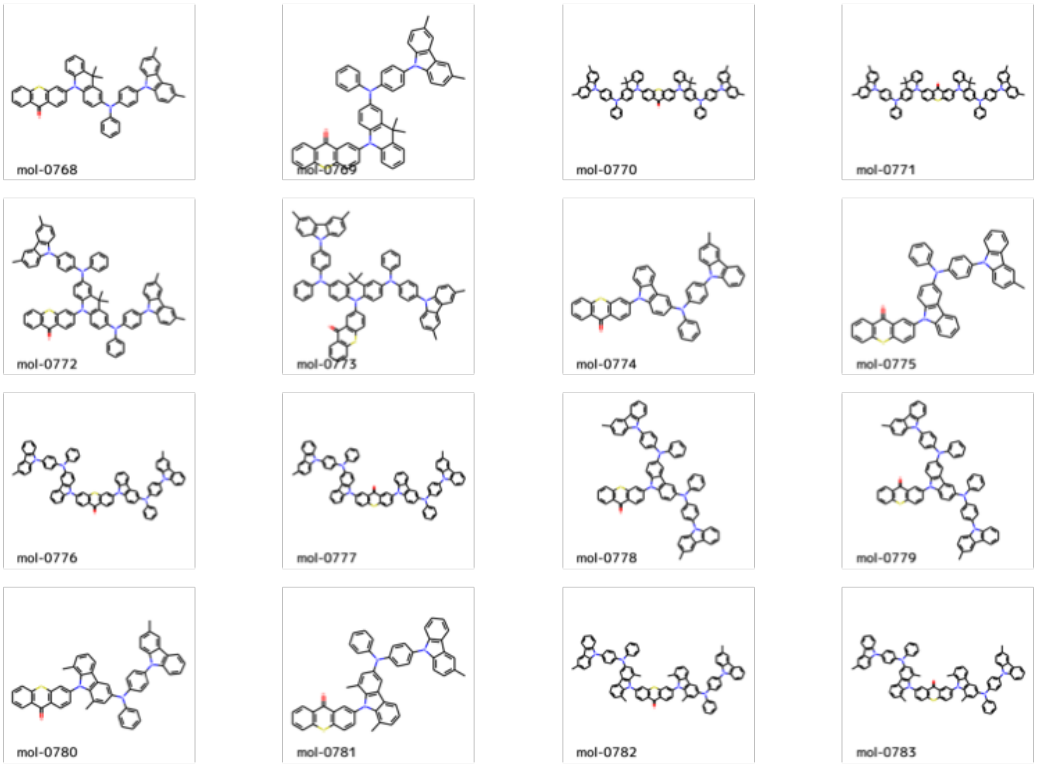
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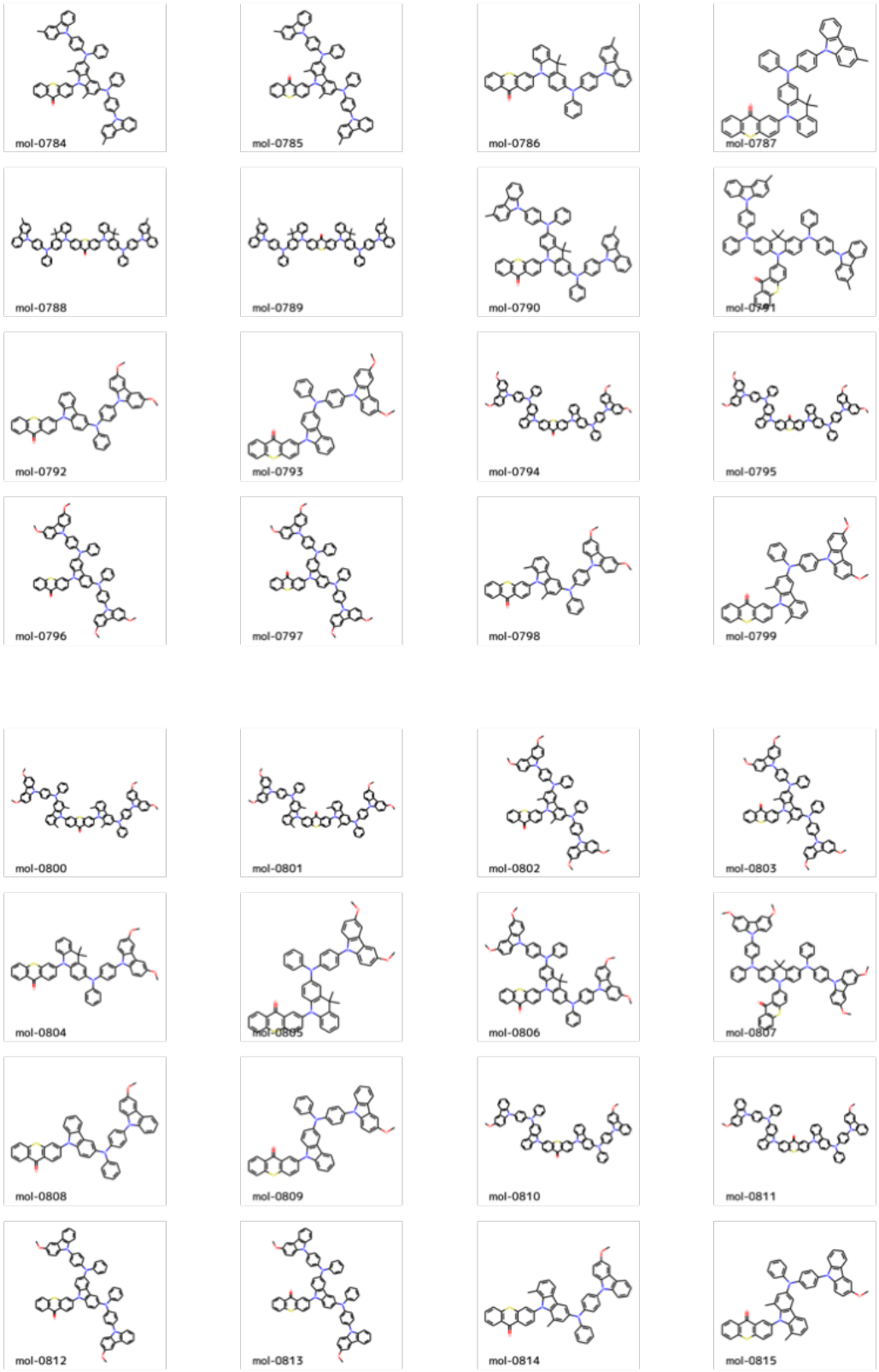
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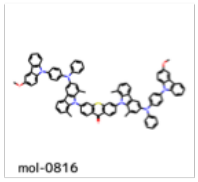
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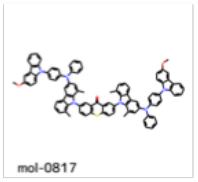
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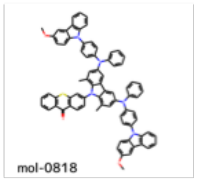
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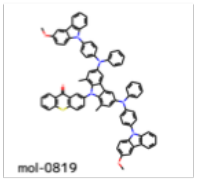
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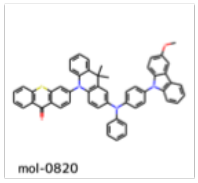
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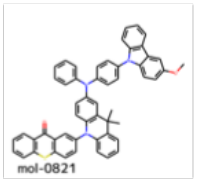
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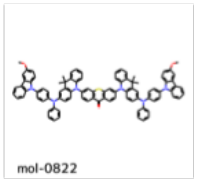
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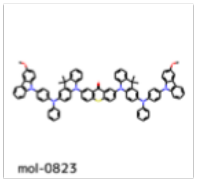
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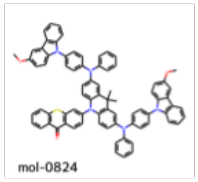
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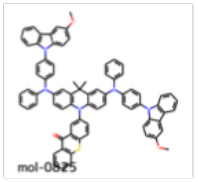
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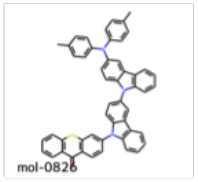
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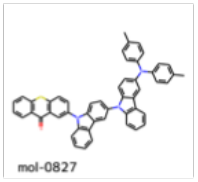
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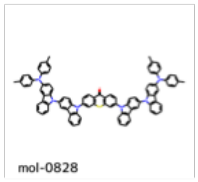
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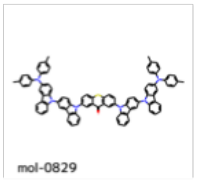
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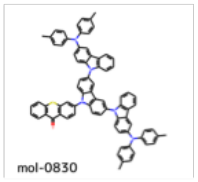
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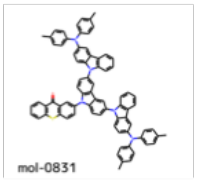
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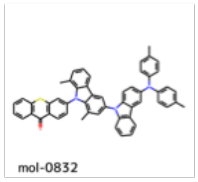
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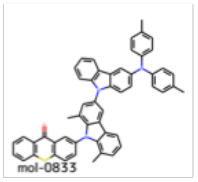
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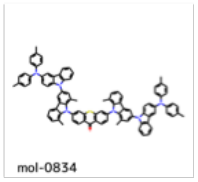
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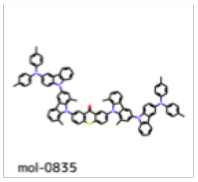
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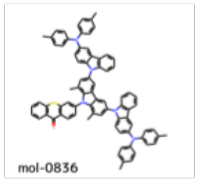
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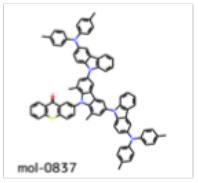
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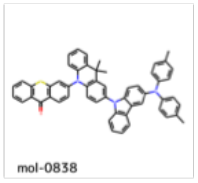
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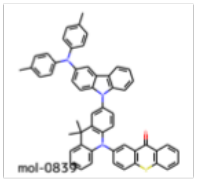
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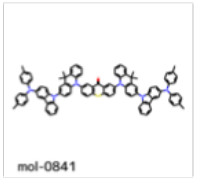
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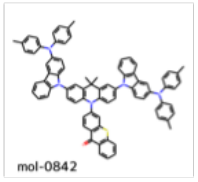
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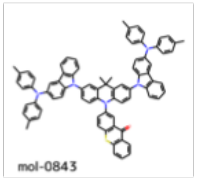
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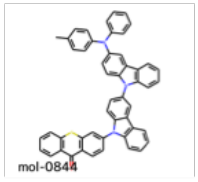
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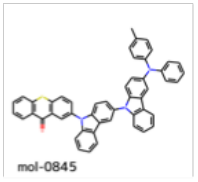
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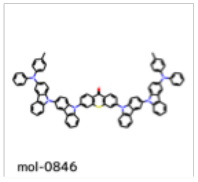
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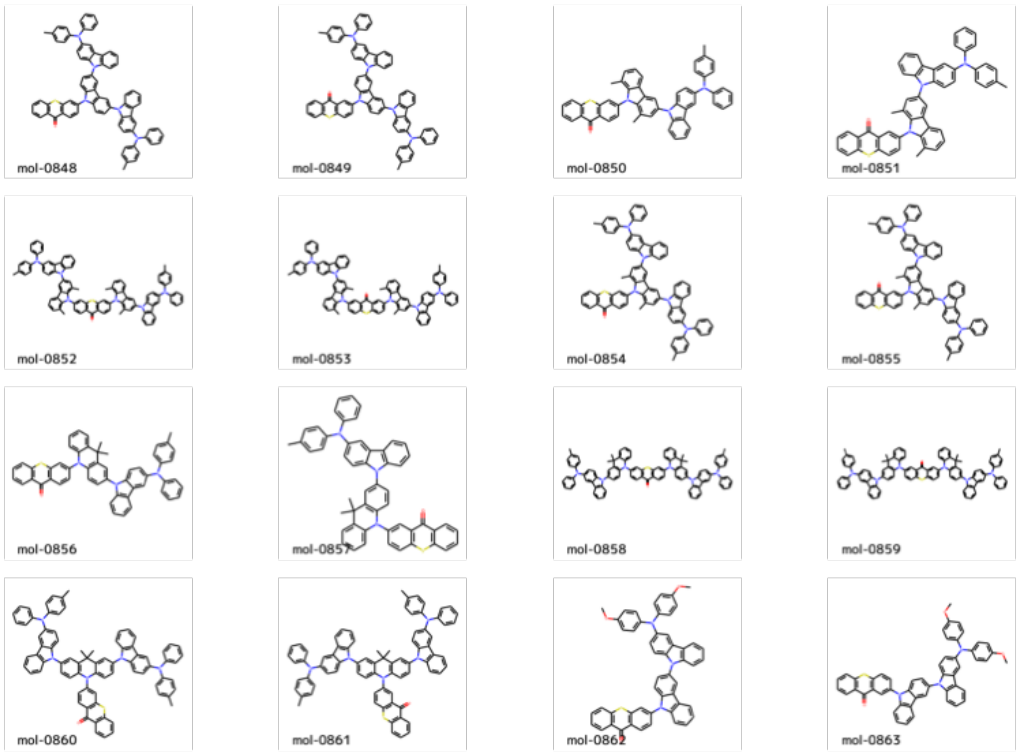
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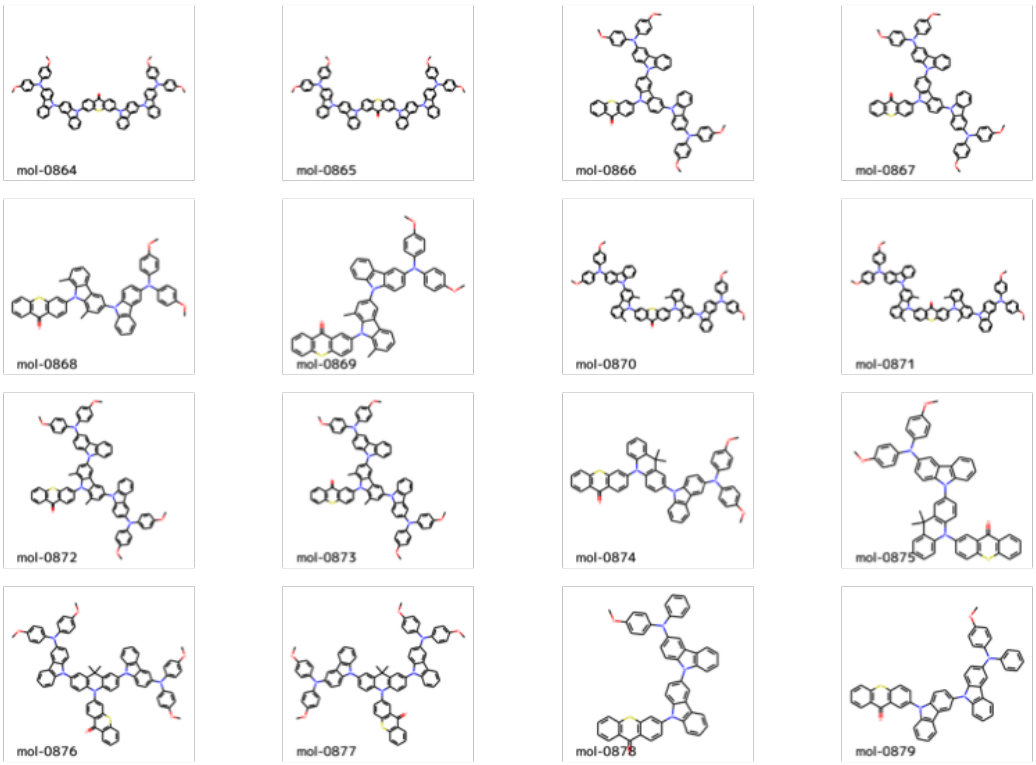
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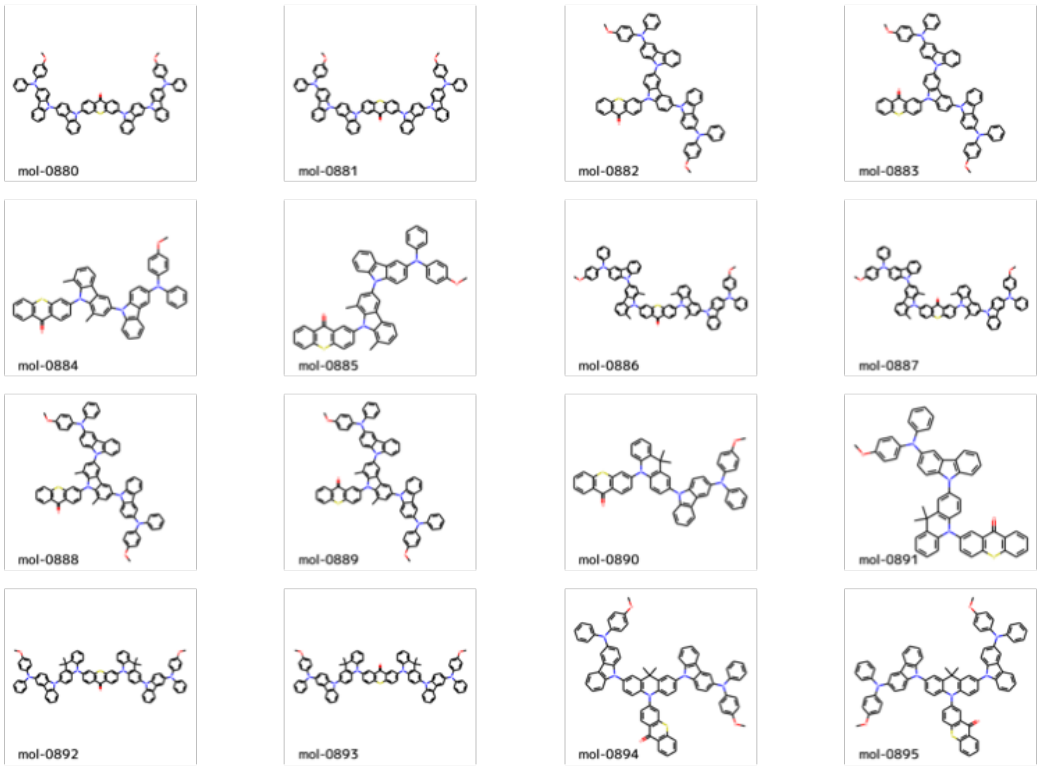
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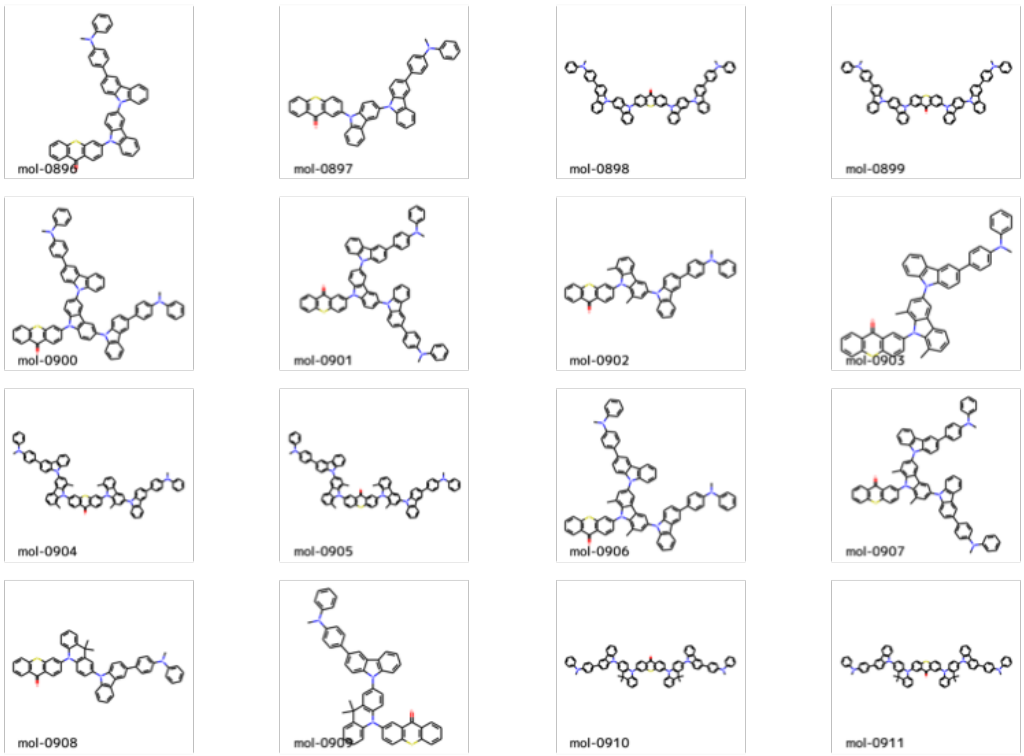
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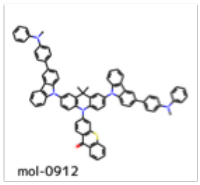
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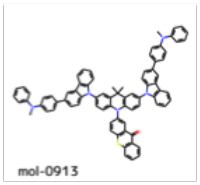
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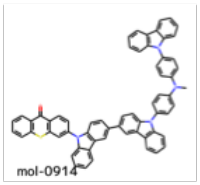
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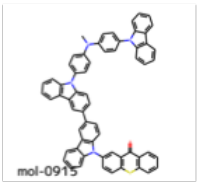
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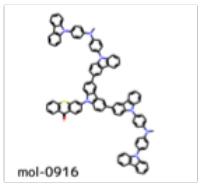
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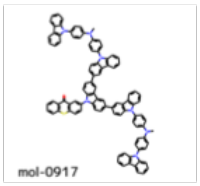
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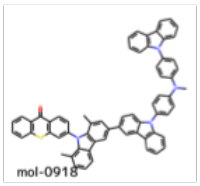
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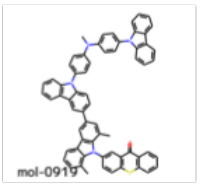
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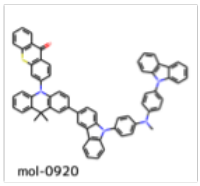
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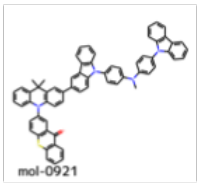
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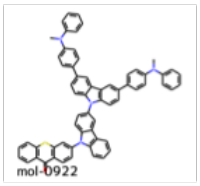
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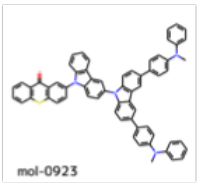
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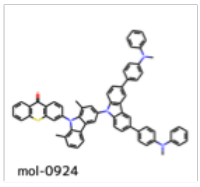
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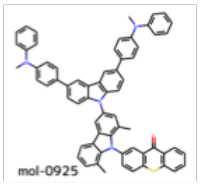
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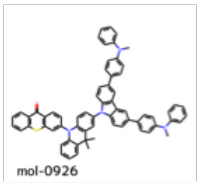
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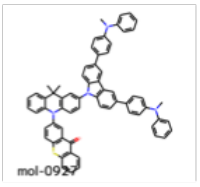
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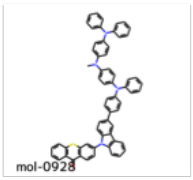
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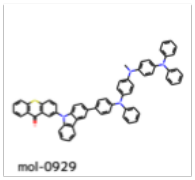
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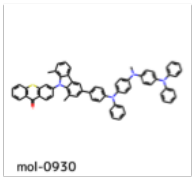
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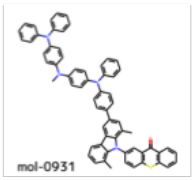
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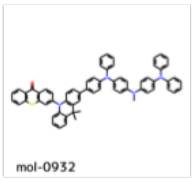
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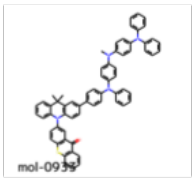
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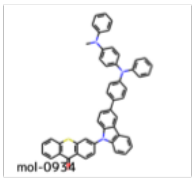
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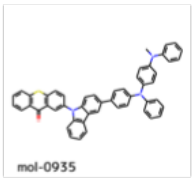
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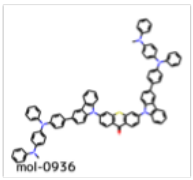
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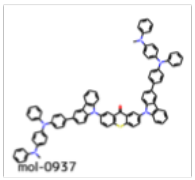
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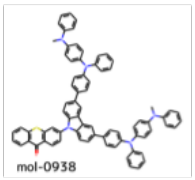
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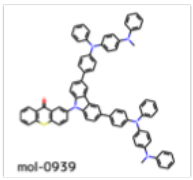
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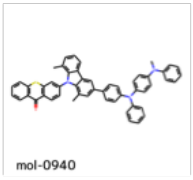
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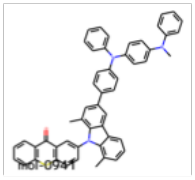
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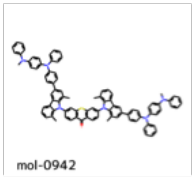
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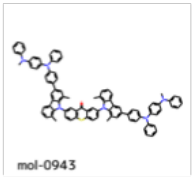
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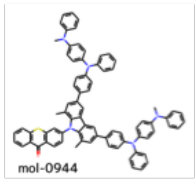
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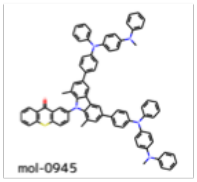
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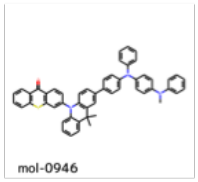
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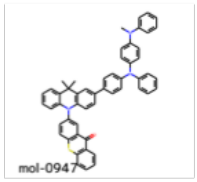
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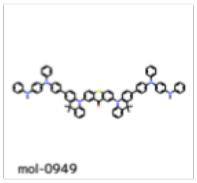
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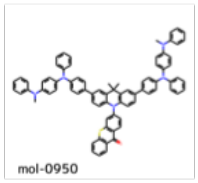
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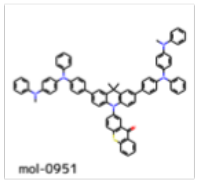
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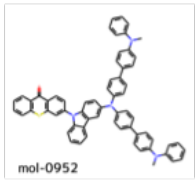
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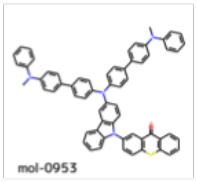
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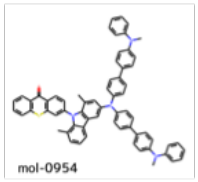
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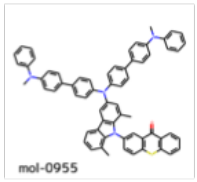
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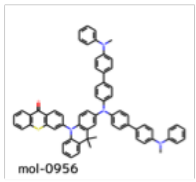
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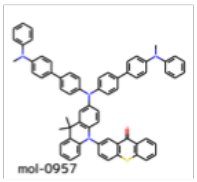
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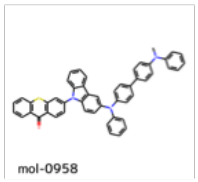
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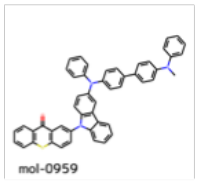
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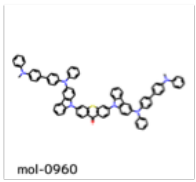
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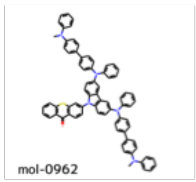
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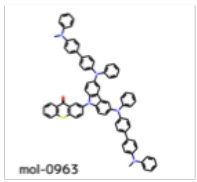
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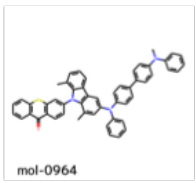
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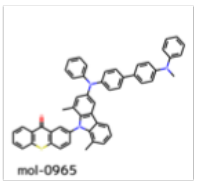
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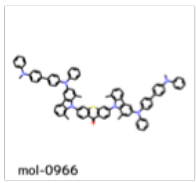
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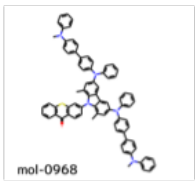
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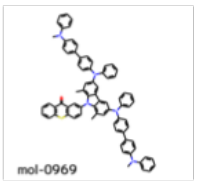
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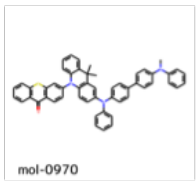
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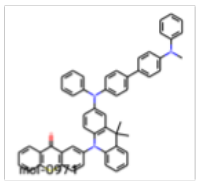
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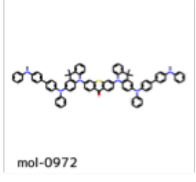
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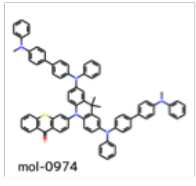
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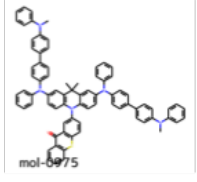
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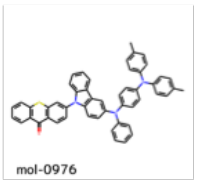
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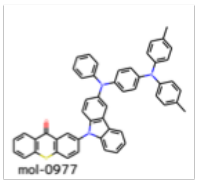
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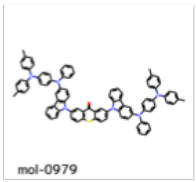
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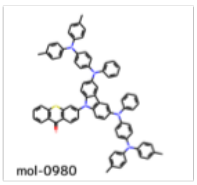
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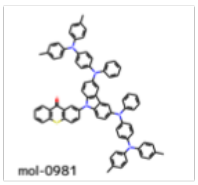
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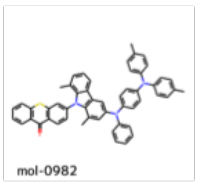
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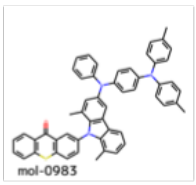
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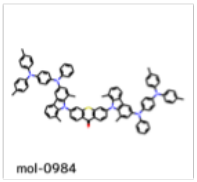
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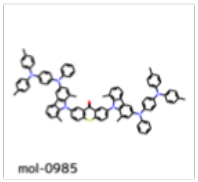
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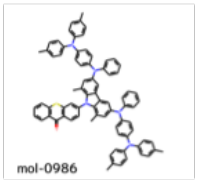
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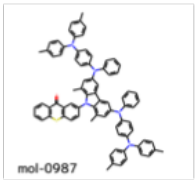
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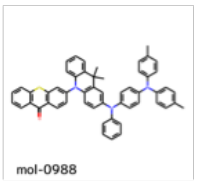
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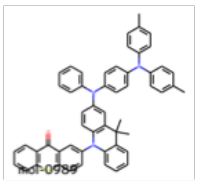
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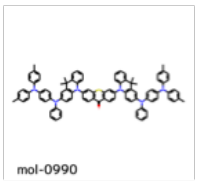
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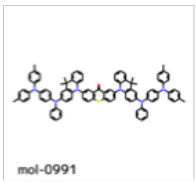
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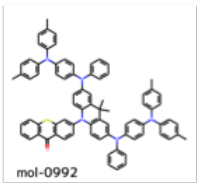
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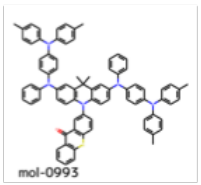
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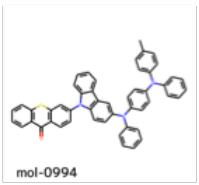
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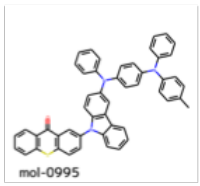
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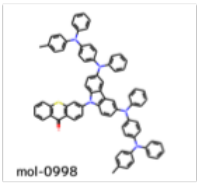
mol-0996


mol-0997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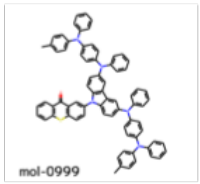
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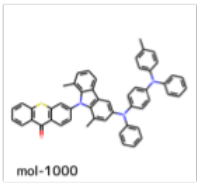
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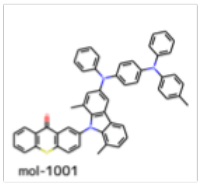
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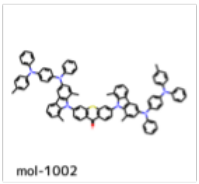
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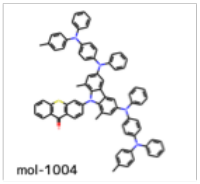
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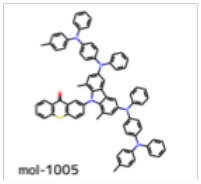
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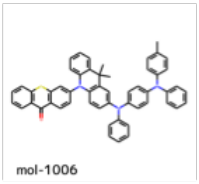
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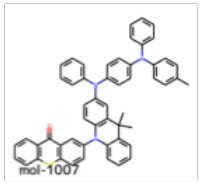
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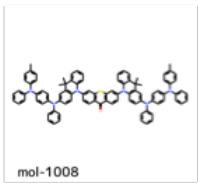
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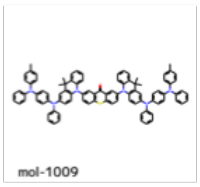
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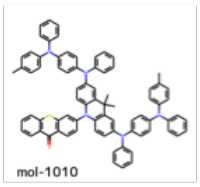
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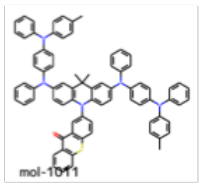
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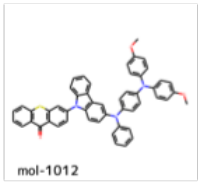
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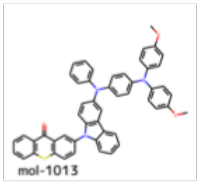
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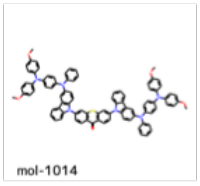
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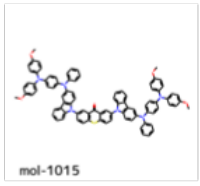
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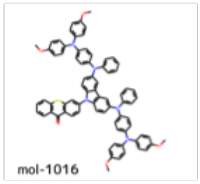
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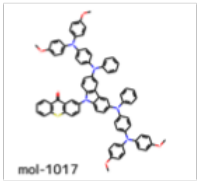
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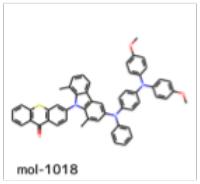
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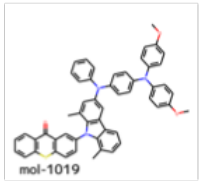
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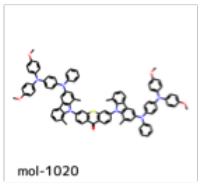
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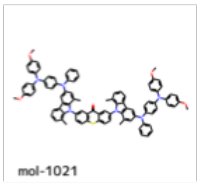
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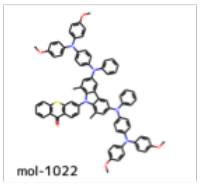
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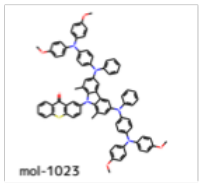
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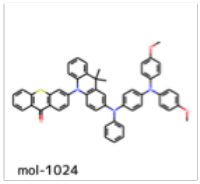
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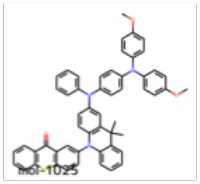
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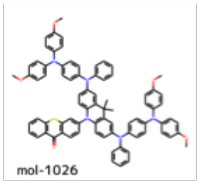
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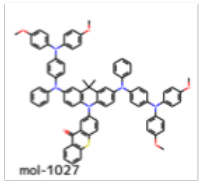
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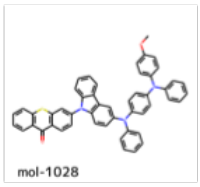
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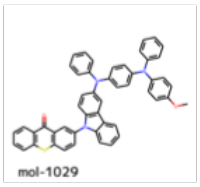
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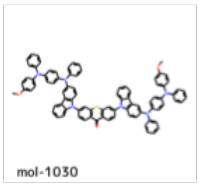
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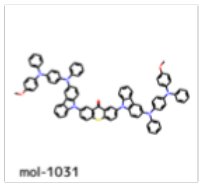
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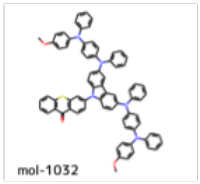
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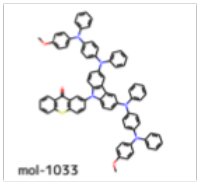
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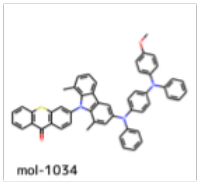
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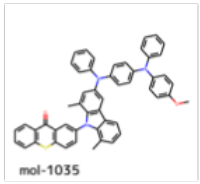
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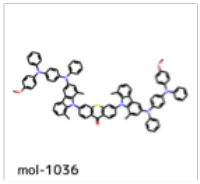
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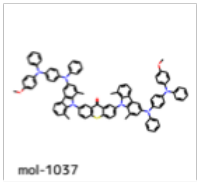
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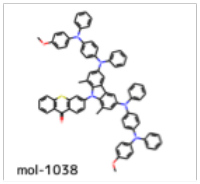
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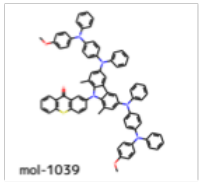
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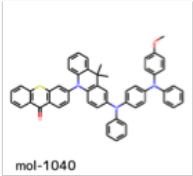
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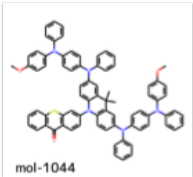
mol-1041


mol-1042


mol-1043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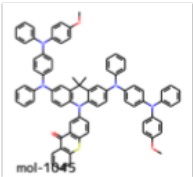
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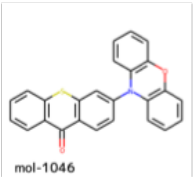
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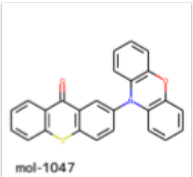
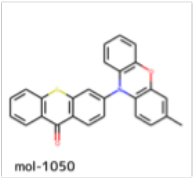

mol-1047


mol-1048


mol-1049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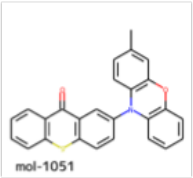
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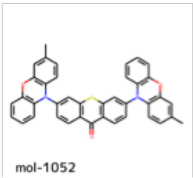
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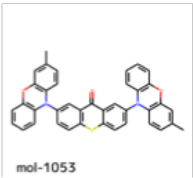
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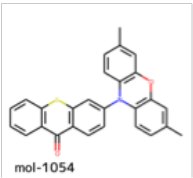
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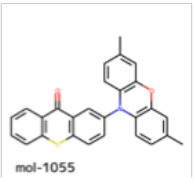
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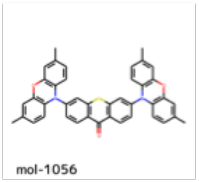
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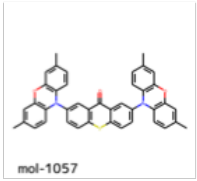
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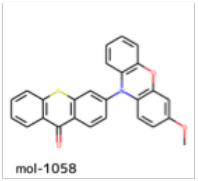
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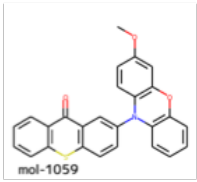
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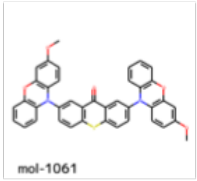
mol-1060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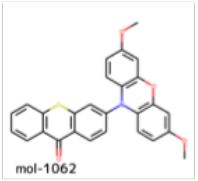
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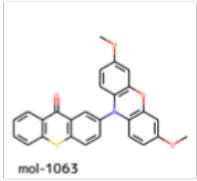
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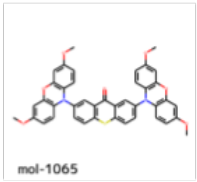
mol-1064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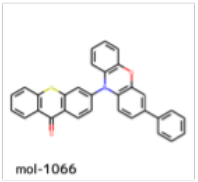
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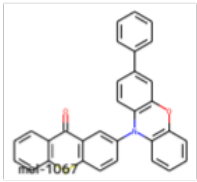
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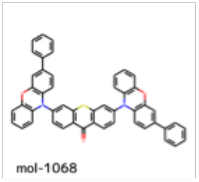
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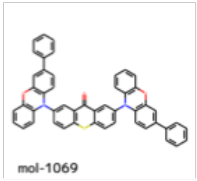
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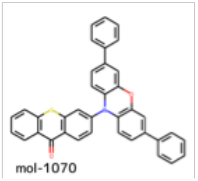
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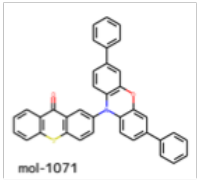
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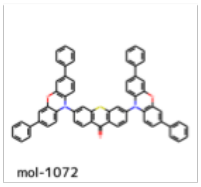
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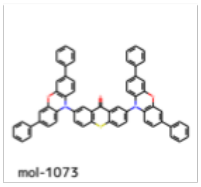
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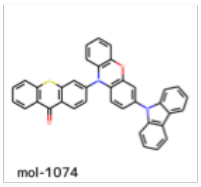
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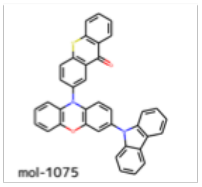
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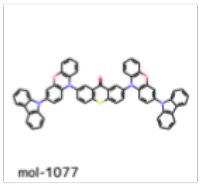
mol-1076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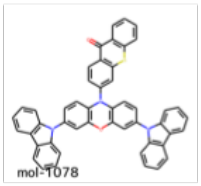
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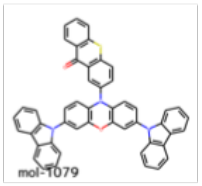
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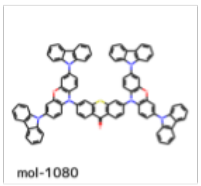
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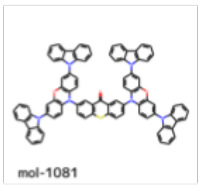
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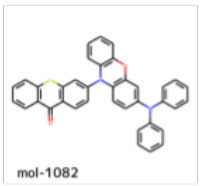
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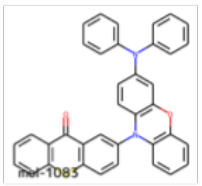
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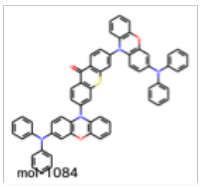
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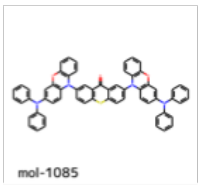
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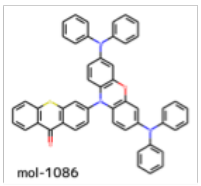
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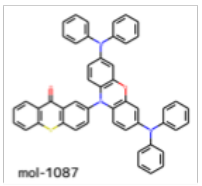
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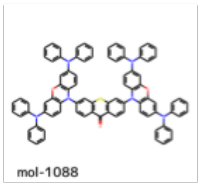
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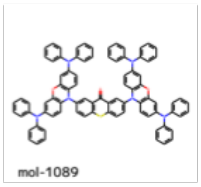
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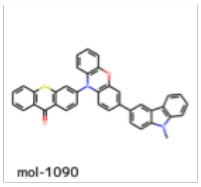
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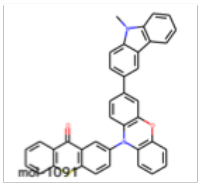
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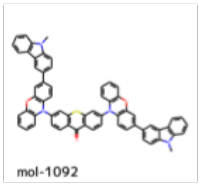
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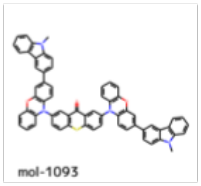
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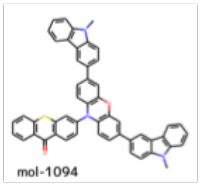
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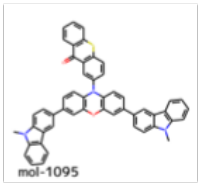
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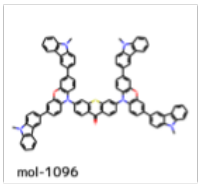
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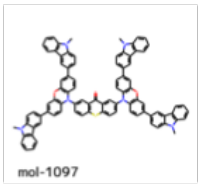
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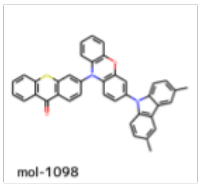
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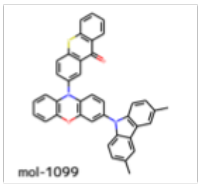
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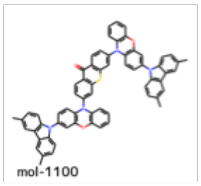
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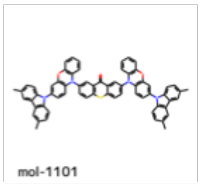
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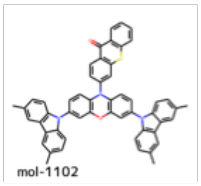
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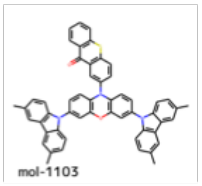
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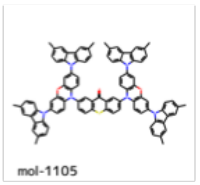
mol-1104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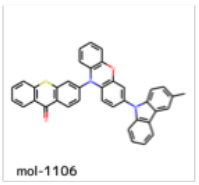
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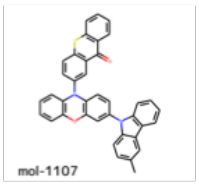
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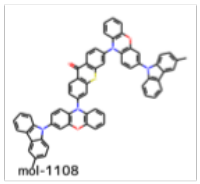
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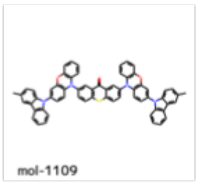
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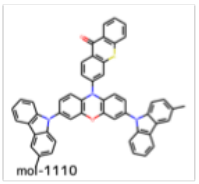
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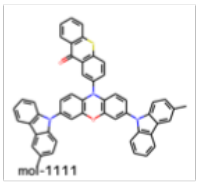
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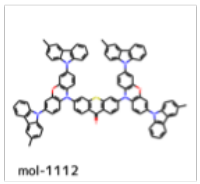
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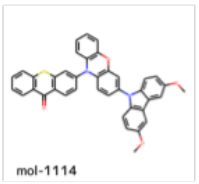
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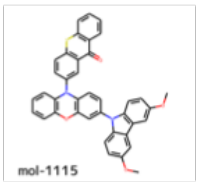
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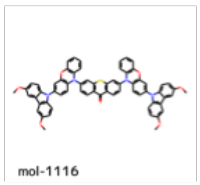
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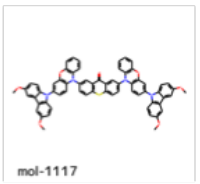
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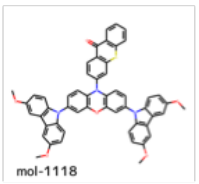
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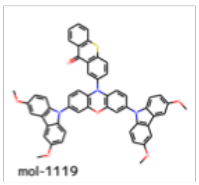
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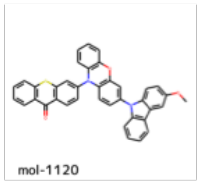
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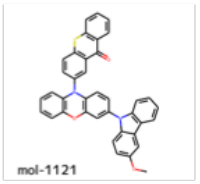
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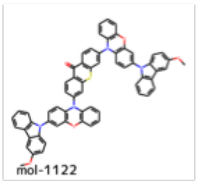
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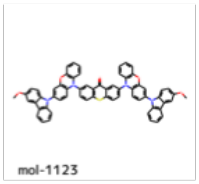
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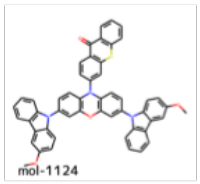
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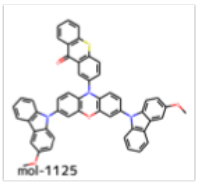
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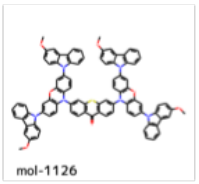
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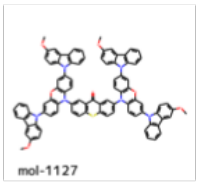
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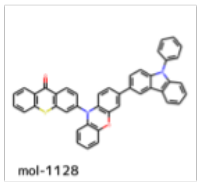
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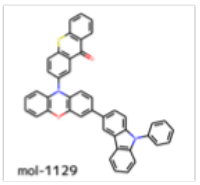
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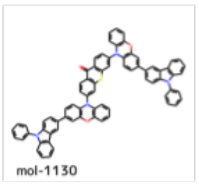
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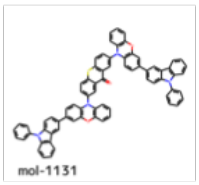
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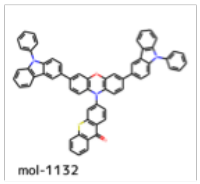
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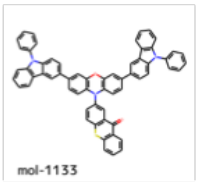
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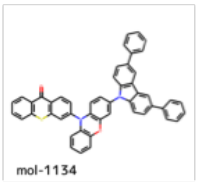
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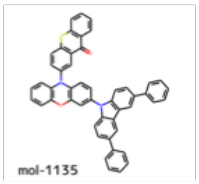
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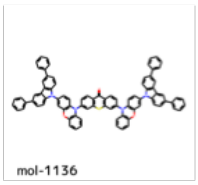
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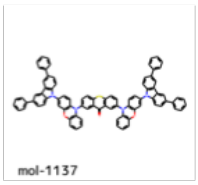
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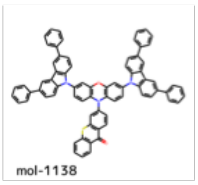
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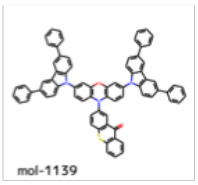
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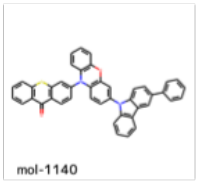
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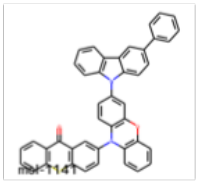
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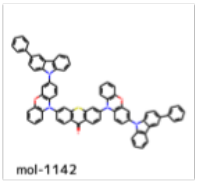
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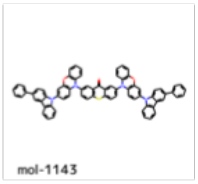
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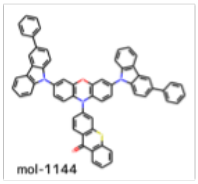
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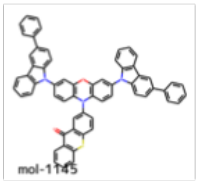
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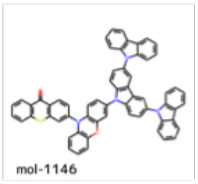
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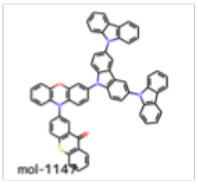
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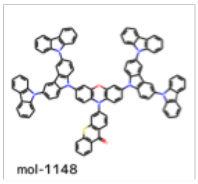
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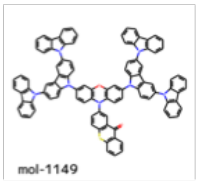
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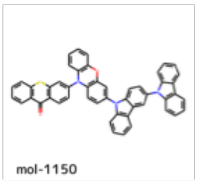
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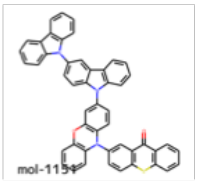
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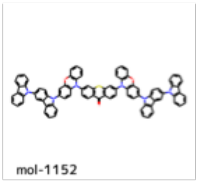
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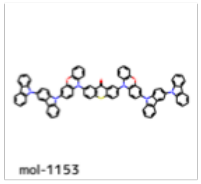
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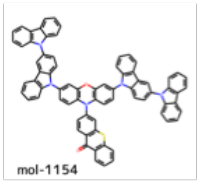
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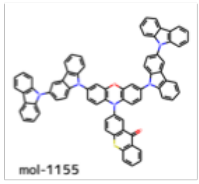
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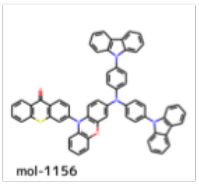
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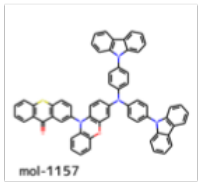
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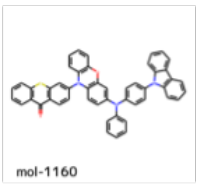
mol-1158


mol-1159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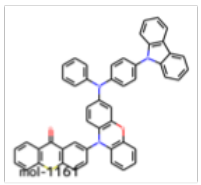
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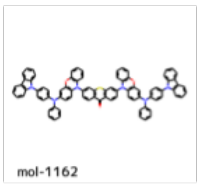
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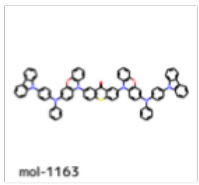
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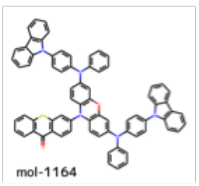
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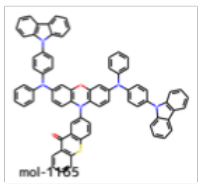
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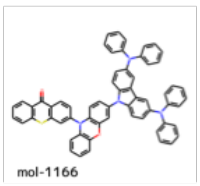
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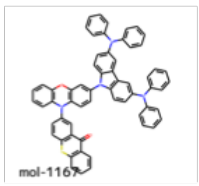
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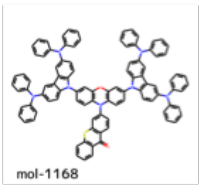
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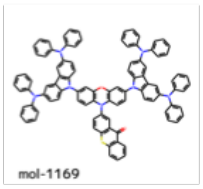
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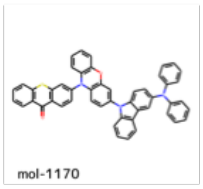
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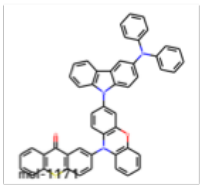
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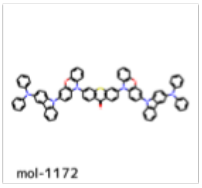
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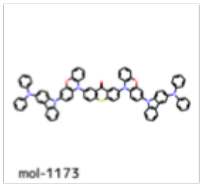
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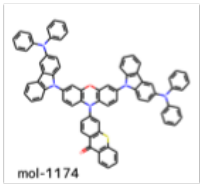
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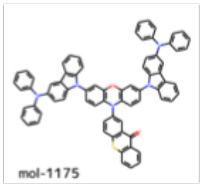
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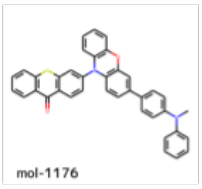
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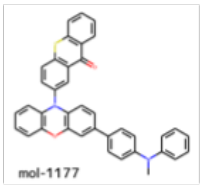
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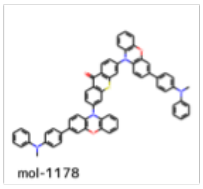
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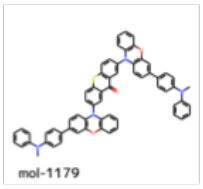
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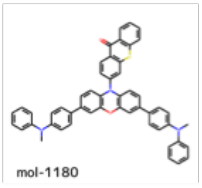
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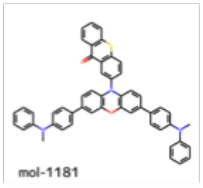
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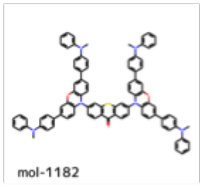
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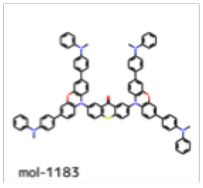
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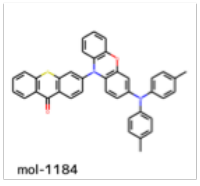
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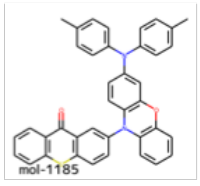
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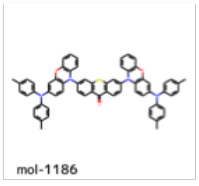
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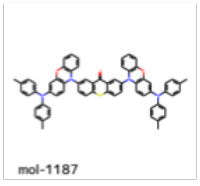
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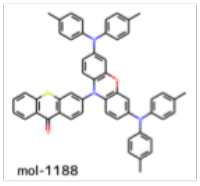
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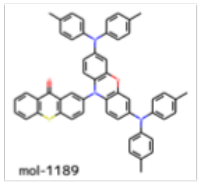
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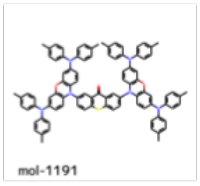
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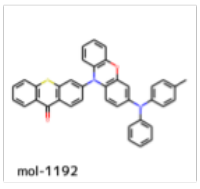
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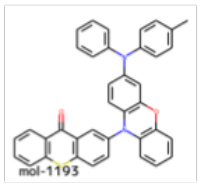
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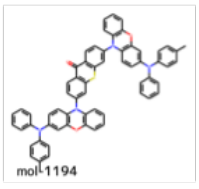
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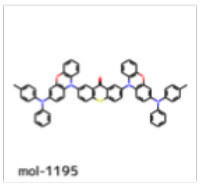
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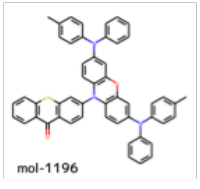
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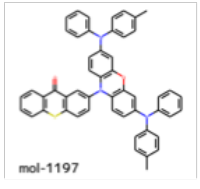
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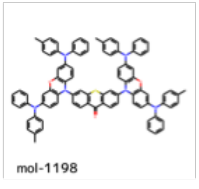
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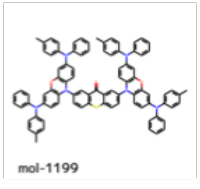
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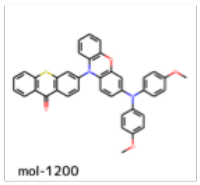
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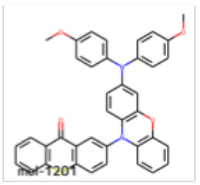
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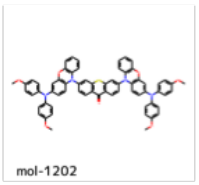
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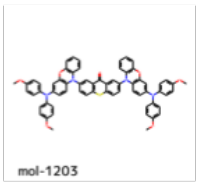
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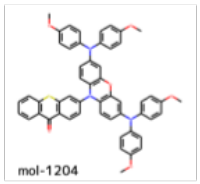
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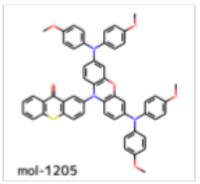
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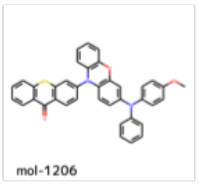
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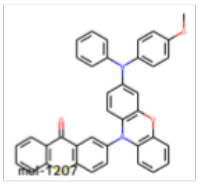
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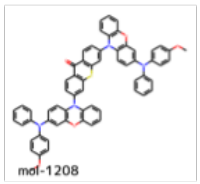
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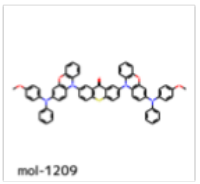
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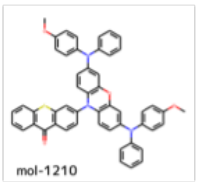
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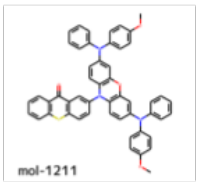
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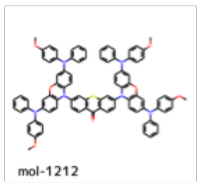
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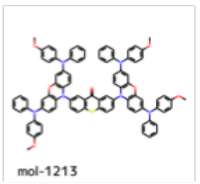
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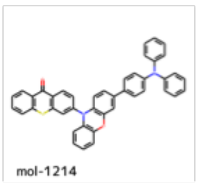
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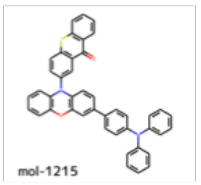
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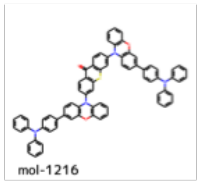
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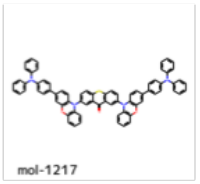
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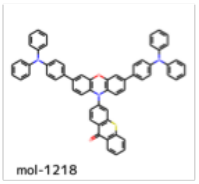
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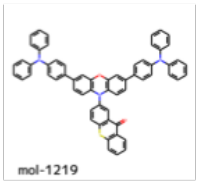
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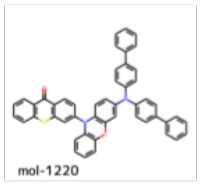
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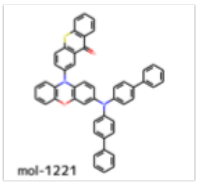
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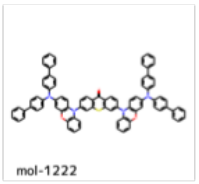
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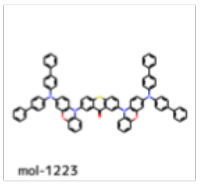
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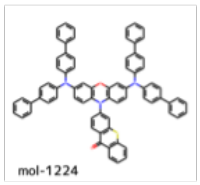
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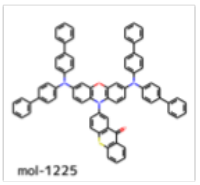
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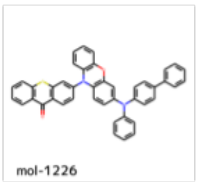
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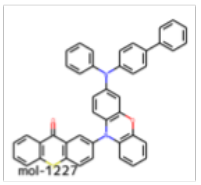
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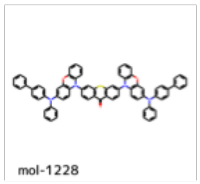
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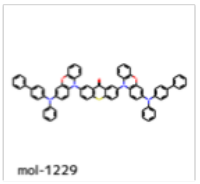
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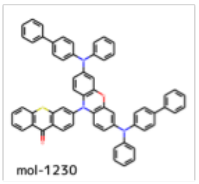
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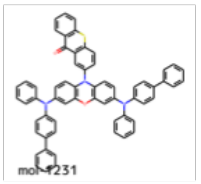
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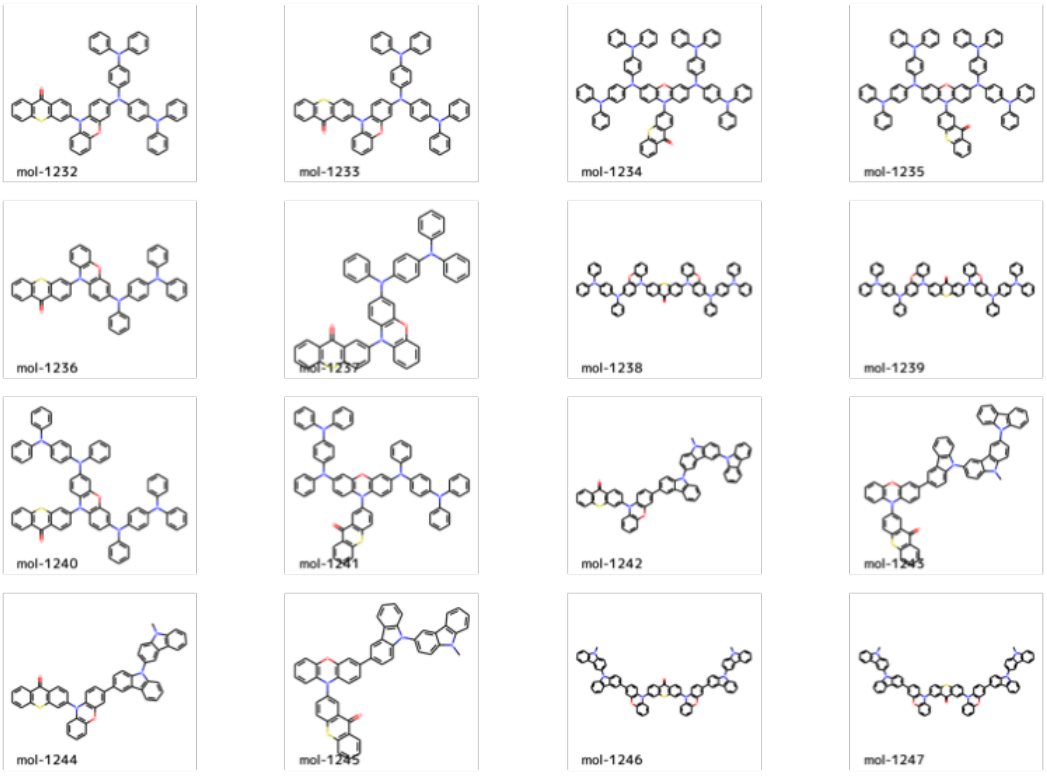
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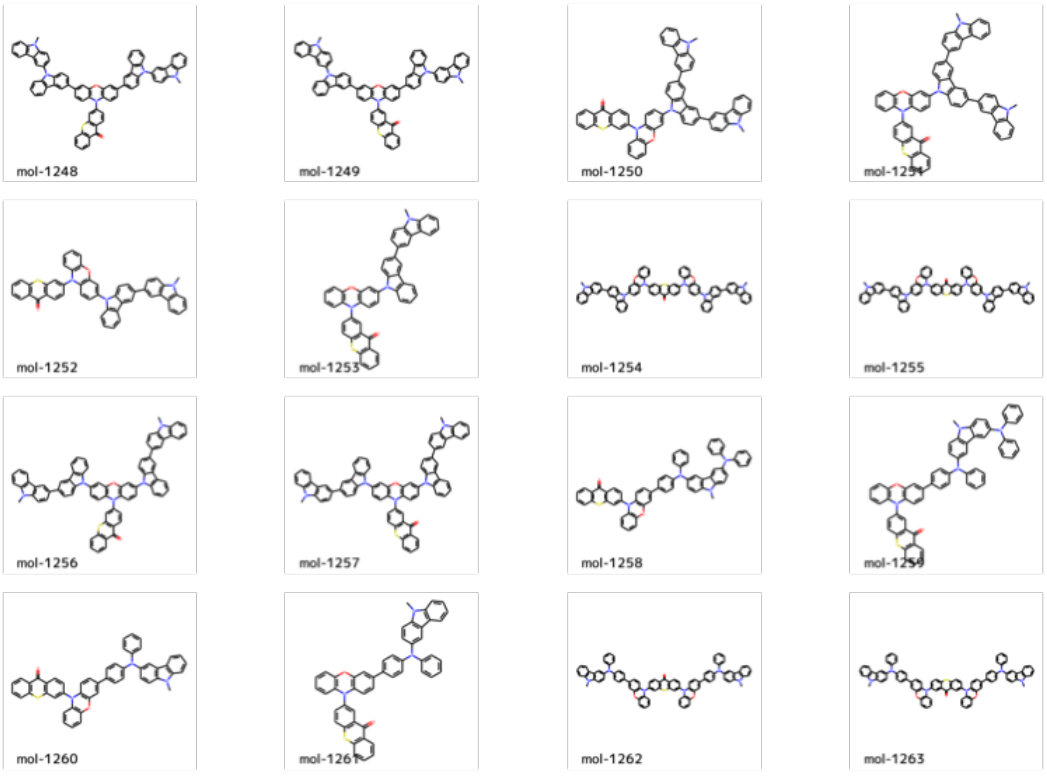
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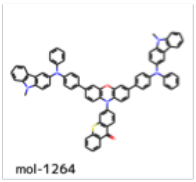
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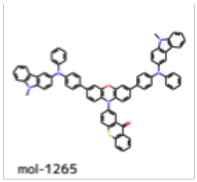
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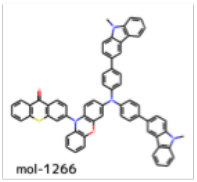
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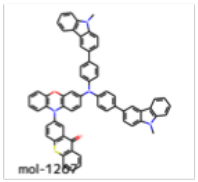
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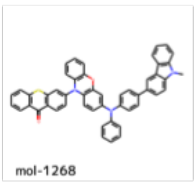
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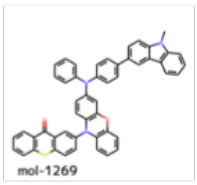
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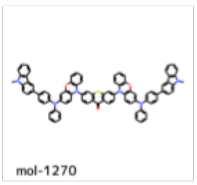
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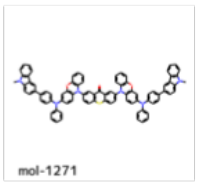
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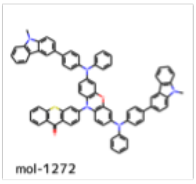
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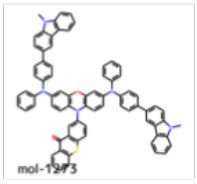
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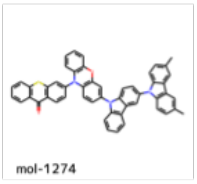
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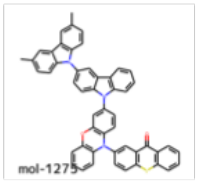
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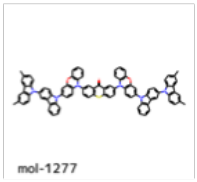
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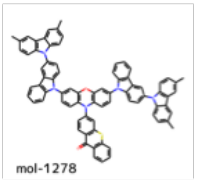
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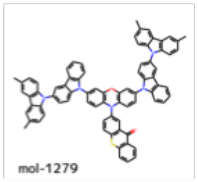
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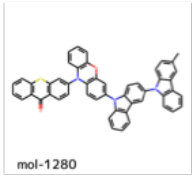
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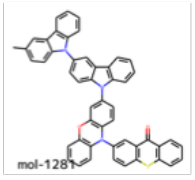
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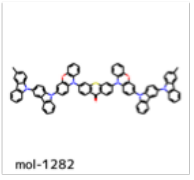
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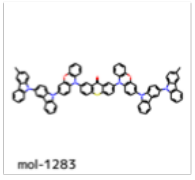
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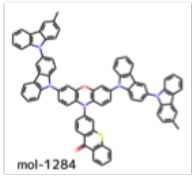
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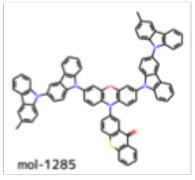
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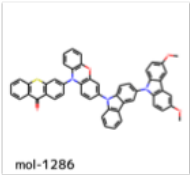
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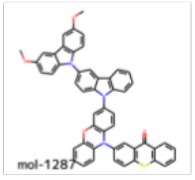
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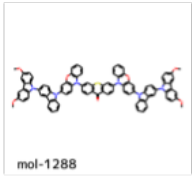
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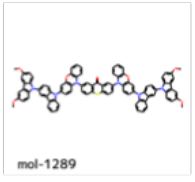
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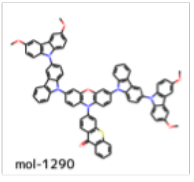
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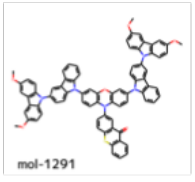
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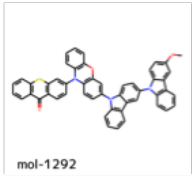
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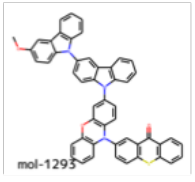
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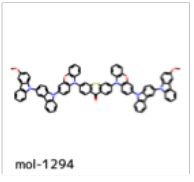
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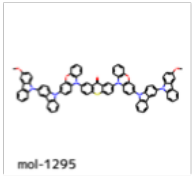
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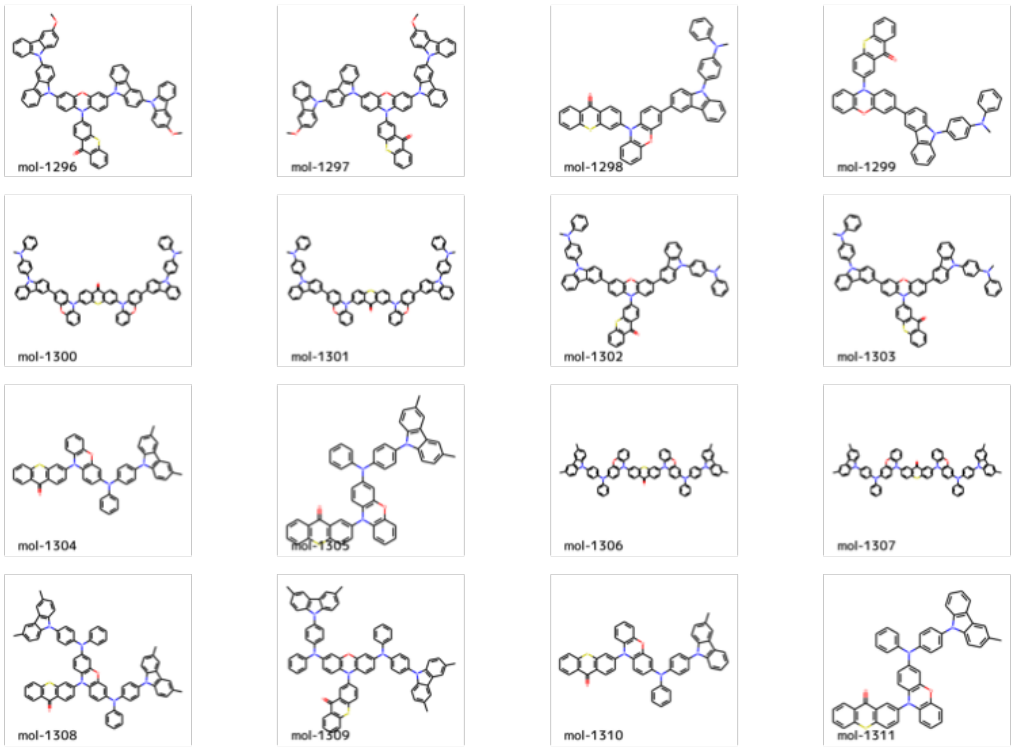
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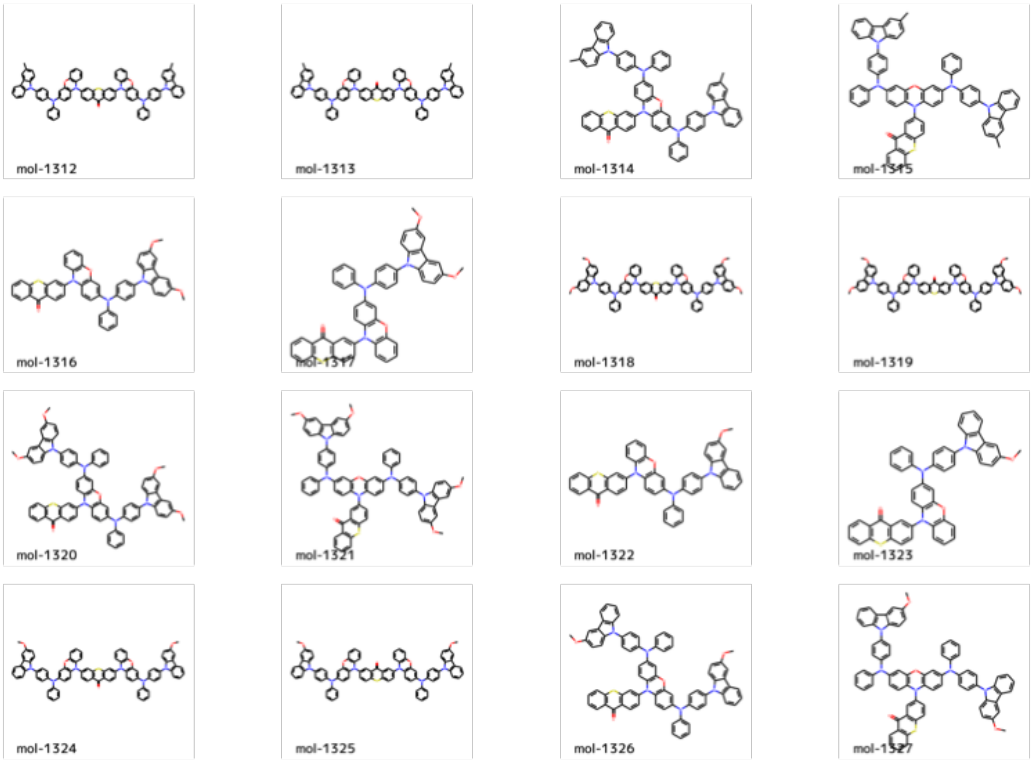
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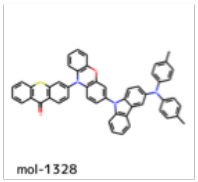
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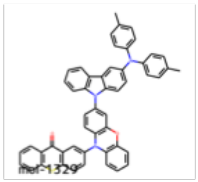
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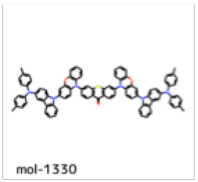
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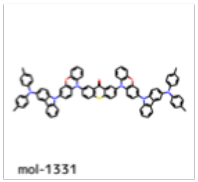
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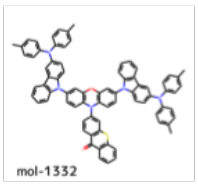
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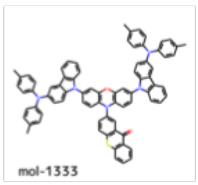
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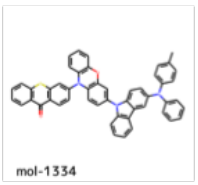
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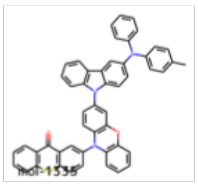
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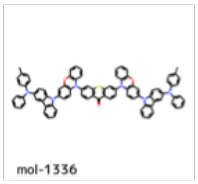
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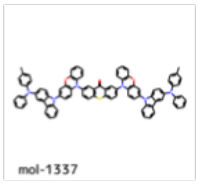
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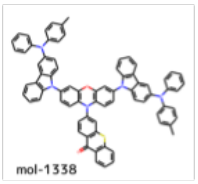
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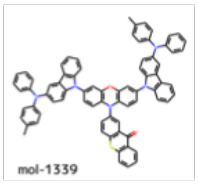
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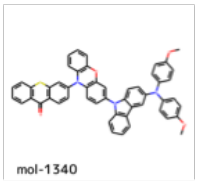
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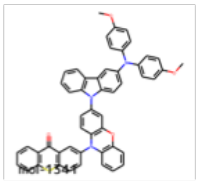
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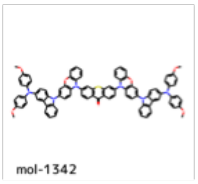
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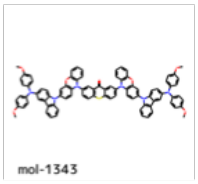
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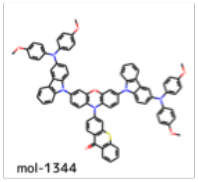
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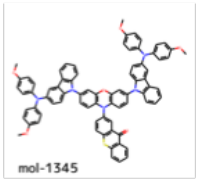
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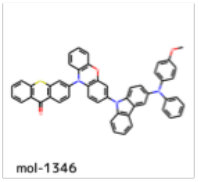
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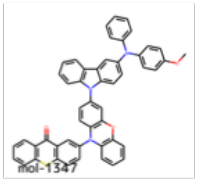
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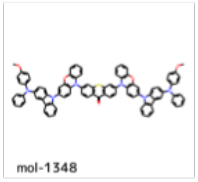
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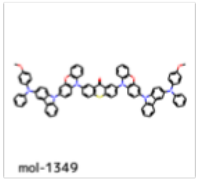
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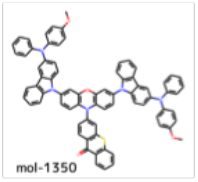
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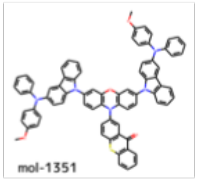
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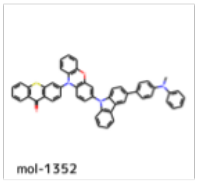
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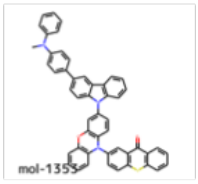
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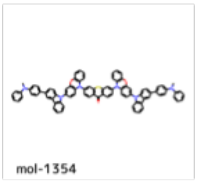
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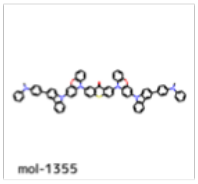
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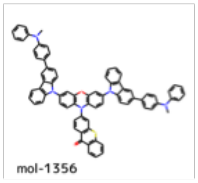
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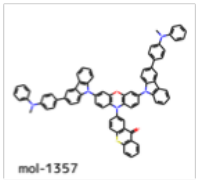
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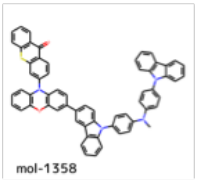
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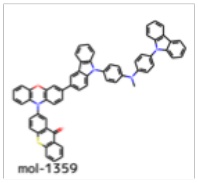
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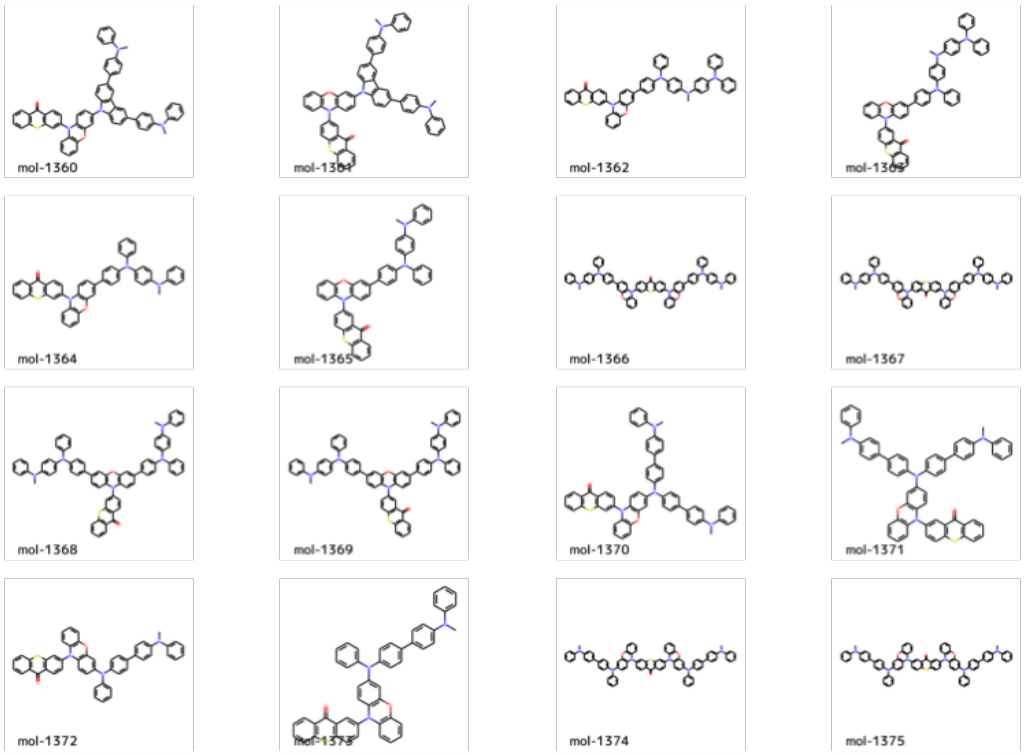
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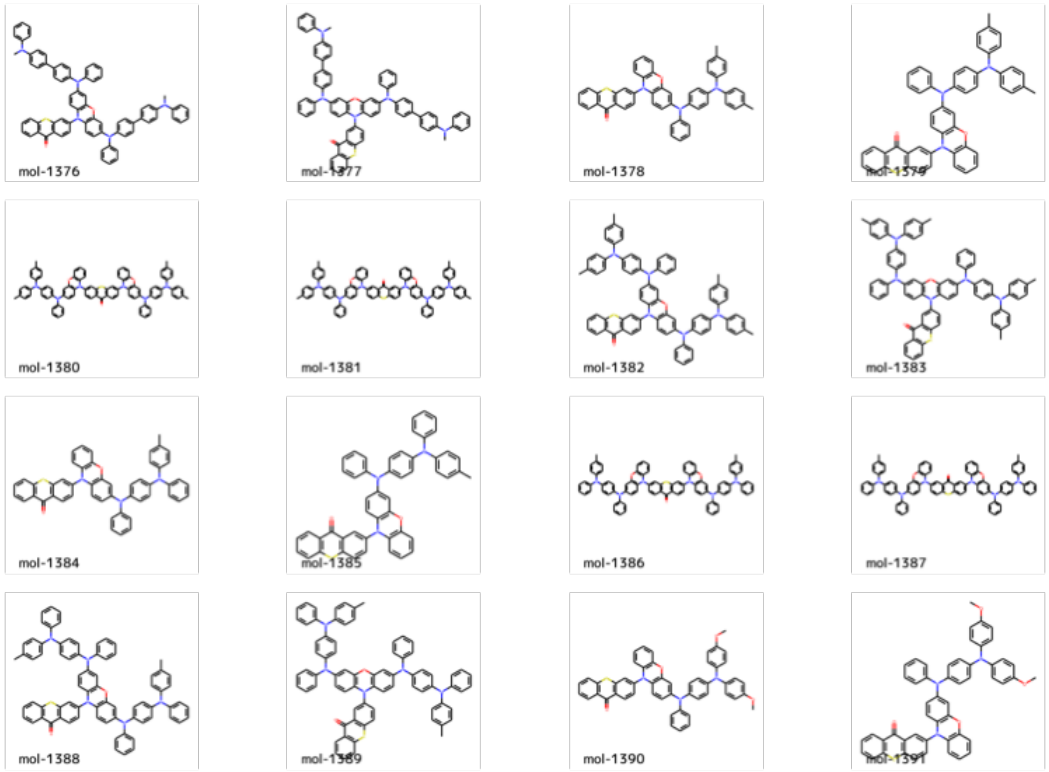
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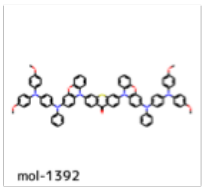
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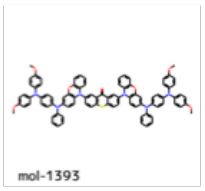
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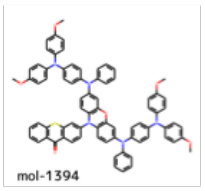
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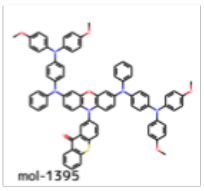
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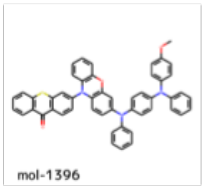
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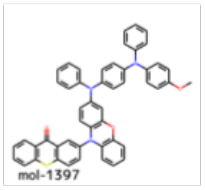
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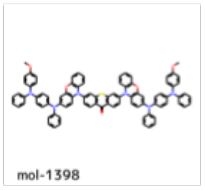
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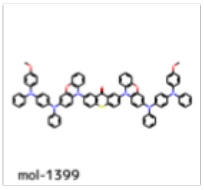
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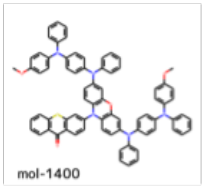
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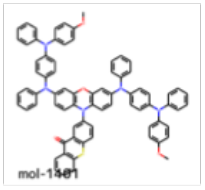
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