Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Table S1: Excitation energies in eV obtained with G_0W_0+BSE@PBE for all molecules studied here

Family	no.	s1	t1	t2	2t1-s1	2t1-t2	Name
A	1	2.78	1.40	2.45	0.02	0.34	anthracene
	2	2.62	1.30	2.49	-0.02	0.11	9,10-dimethylanthracene
	3	2.70	1.40	2.59	0.09	0.20	9,10-diphenylanthracene
	4	2.10	0.89	1.95	-0.33	-0.18	9,10-bis(phenylethynyl)anthracene
	5	2.02	0.83	1.93	-0.35	-0.26	1-chloro-9,10-bis(phenylethynyl)anthracene
	6	2.65	1.38	2.43	0.11	0.32	9,9'-bianthracene
	7	2.67	1.38	2.18	0.09	0.58	9,10-di(naphth-2-yl)anthracene
	8	2.38	1.27	2.47	0.16	0.08	9,10-bis(diphenyl-phosphoryl)anthracene
	9	2.65	1.37	2.17	0.10	0.58	9-(9-phenylcarbazole-3-yl)-10-(naphthalene-1-yl)anthracene
	10	2.69	1.41	2.15	0.14	0.68	6-methyl-2-(4-(9-(4-(6-methylbenzo[d]thiazol-2-yl)phenyl)anthracen-10-yl)phenyl)benzo[d]thiazole
	11	1.95	0.78	1.81	-0.40	-0.26	5,6,11,12-tetraphenyltetracene
	12	1.87	1.28	1.50	0.69	1.06	N,N'-dimethyl-quinacridone
	13	1.90	0.83	1.66	-0.25	-0.01	tetrabenzo(de,no,st,c1d1)heptacene
	14	1.83	1.10	1.78	0.38	0.43	9,10,11,20,21,22-hexaphenyltetrabenzo(a,c,l,n)pentacene
B	1	2.91	1.68	2.61	0.45	0.74	pyrene
	2	2.90	1.65	2.62	0.40	0.69	1,6-di-tert-butylpyrene
	3	2.94	1.69	2.64	0.43	0.73	1,3,6,8-tetraphenylpyrene
	4	2.88	1.65	2.58	0.41	0.71	1,4-di(pyren-1-yl)benzene
C	1	1.47	0.76	1.69	0.05	-0.17	pyracyclene
D	1	2.37	1.07	2.29	-0.23	-0.15	perylene
	2	2.48	1.34	2.24	0.19	0.43	6H-phenanthro(1,10,9,8-c,d,e,f,g)carbazole
	3	2.59	1.55	2.27	0.52	0.83	1,12-benzoperylene
	4	2.31	1.07	2.26	-0.18	-0.12	1,2,7,8-tetrahydrodicyclopenta[cd,lm]perylene
	5	2.38	1.11	2.16	-0.15	0.07	2,8-diethyl-1,7-diazaperylene
	6	2.42	1.22	2.32	0.03	0.13	1,4,7,10-tetrakis(trifluoromethyl)perylene

	7	1.75	1.00	1.37	0.24	0.62	12-ethyl-11-methyl-11,12-dihydro-10H-cyclopenta[b]perylen-10-one
	8	2.26	0.99	2.33	-0.28	-0.35	2,5,8,11-tetra-tert-butylperylene
	9	2.11	0.91	1.99	-0.29	-0.17	3-(phenylethynyl)perylene
	10	2.22	1.04	2.26	-0.14	-0.19	3,9-bis(4-methoxyphenyl)perylene
	11	2.13	0.90	2.12	-0.32	-0.31	4-(perylen-3-yl)-N,N-diphenylaniline
	12	2.36	1.10	2.46	-0.16	-0.25	N-(perylen-3-ylmethyl)-N,N-bis(pyridin-2-ylmethyl)amine
	13	2.16	1.02	2.23	-0.12	-0.19	3,4,9-triphenylperylene
	14	2.08	0.98	2.15	-0.13	-0.20	3,4,9,10-tetraphenylperylene
	15	1.93	0.75	1.66	-0.42	-0.15	3,4,9,10-perylenetetracarboxylic dianhydride
	16	1.59	0.76	1.21	-0.08	0.30	diindeno[1,2,3-cd:1',2',3'-lm]perylene
E	1	2.05	1.13	1.66	0.20	0.59	benzo[lm]chryseno[1,12,11,10-opqrab]perylene
	2	1.96	0.82	1.81	-0.32	-0.17	11-phenylbenzo[a]naphtho[2,1,8-cde]perylene
	3	1.82	0.84	1.59	-0.14	0.09	dibenzo(def,i)naphtho(1,8,7-v,w,x)pyranthrene
	4	1.84	0.66	1.46	-0.52	-0.14	anthra(2,1,9,8-hijkl)benzo(de)naphtho(2,1,8,7-stuv)pentacene
F	1	3.22	1.60	2.63	-0.02	0.57	2,1,3-benzoxadiazole-5-carboxylic
	2	3.19	1.63	2.73	0.07	0.53	4-chloro-7-chlorosulfonyl-2,1,3-benzoxadiazole
	3	3.41	1.92	2.47	0.43	1.36	2,5-diphenyloxazole
	4	2.41	1.03	2.17	-0.36	-0.12	1,3-diphenylisobenzofuran
	5	3.40	2.11	2.44	0.82	1.78	2-(4-biphenylyl)-5-phenyl-1,3,4-oxadiazole
	6	2.75	1.51	2.26	0.26	0.75	2,5-bis(5-tert-butyl-benzoxazol-2-yl)thiophene
G	1	3.08	2.02	2.64	0.95	1.40	7-amino-4-methyl-2-hydroxyquinoline
	2	3.12	1.89	2.63	0.66	1.14	7-amino-4-methylcoumarin
	3	3.00	1.73	2.61	0.47	0.86	7-diethylamino-4-methylcoumarin
	4	2.53	1.37	2.04	0.22	0.70	3-(2-benzothiazolyl)-7-(diethylamino)coumarin
H	1	2.38	0.93	1.79	-0.52	0.07	difluoro{2-[(3,5-dimethyl-2H-pyrrol-2-ylidene-N)methyl]-3,5-dimethyl-1H-pyrrolato-N}boron
	2	2.59	0.95	2.07	-0.70	-0.18	2,8-diethyl-1,3,5,7-tetramethyl-9-phenylbipyrromethene

I	1	2.43	1.15	1.38	-0.13	0.92	alpha-quaterthiophene
	2	1.93	0.86	0.94	-0.21	0.79	alpha-sexithiophene
	3	2.36	1.32	1.75	0.28	0.89	5,5'-di(9H-fluoren-2-yl)-2,2'-bithiophene
J	1	2.38	1.00	1.33	-0.37	0.68	4-(dicyanomethylene)-2-methyl-6-(4-dimethylaminostyryl)-4H-pyran
	2	2.80	1.70	1.84	0.60	1.57	4,4'-bis(2,2-diphenylethenyl)-1,1'-biphenyl
	3	2.08	1.19	1.54	0.31	0.85	4-(di-p-tolylamino)-4'-[(di-p-tolylamino)styryl]stilbene
K	1	1.30	0.52	1.46	-0.25	-0.42	2-[7-(4-diphenylaminophenyl)-2,1,3-benzothiadiazol-4-yl]methylenepropanedinitrile
	2	1.25	0.46	1.41	-0.32	-0.49	2-[(7-{4-[N,N-bis(4-methylphenyl)amino]phenyl}-2,1,3-benzothiadiazol-4-yl)methylene]propanedinitrile