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Supporting Information

An Uncommon Multicomponent Reaction Involving Nucleophilic Heterocyclic carbenes: Facile Synthesis of Fully Substituted Cyclopentanones.

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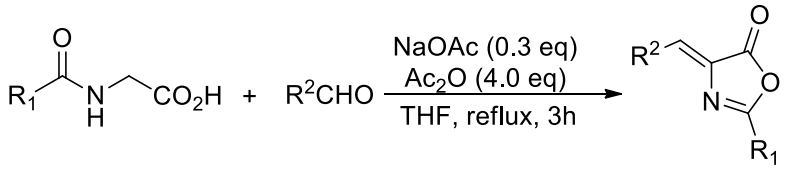
General Remarks

Melting points were recorded on a Büchi melting point apparatus and are uncorrected. NMR spectra were recorded at 500 (^{1}H) and 126 (^{13}C) MHz respectively on a Bruker DPX-500 MHz NMR spectrometer. Chemical shifts (δ) are reported relative to TMS (^{1}H) and $CDCl_3$ (^{13}C) as the internal standards. Coupling constant (*J*) is reported in Hertz (Hz). Mass spectra were recorded under HRMS (ESI) using Thermo Scientific Exactive Orbitrap mass spectrometer. IR spectra were recorded on a Bruker Alpha-T FT-IR spectrophotometer. Gravity column chromatography was performed using 100-200 mesh silica gel and mixtures of hexane-ethyl acetate were used for elution.

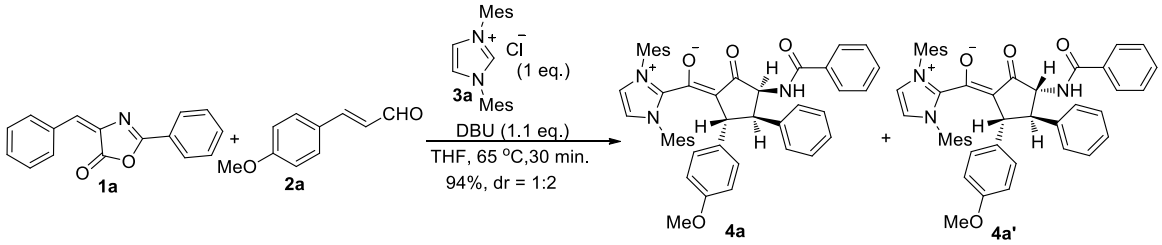
General procedure for the synthesis of 4-arylidene-2-aryloxazol-5(4H)-one



Hippuric acid (1.8 g, 10 mmol, 1.0 eq), aldehyde (12 mmol, 1.2 eq), NaOAc (0.25 g, 3 mmol, 0.3 eq) and Ac_2O (40 mmol, 4.0 mL, 4.0 eq) were dissolved in 30 mL THF, and then heated to reflux for about 3 h. The reaction mixture was cooled to room temperature. Saturated Na_2CO_3 solution was added to the reaction mixture, and extracted with DCM for 3 times. The combined organic layers were dried over anhydrous Na_2SO_4. The crude product was purified by silica gel column chromatography or recrystallization by EtOH to afford products (**1a** - **j**, **5**).

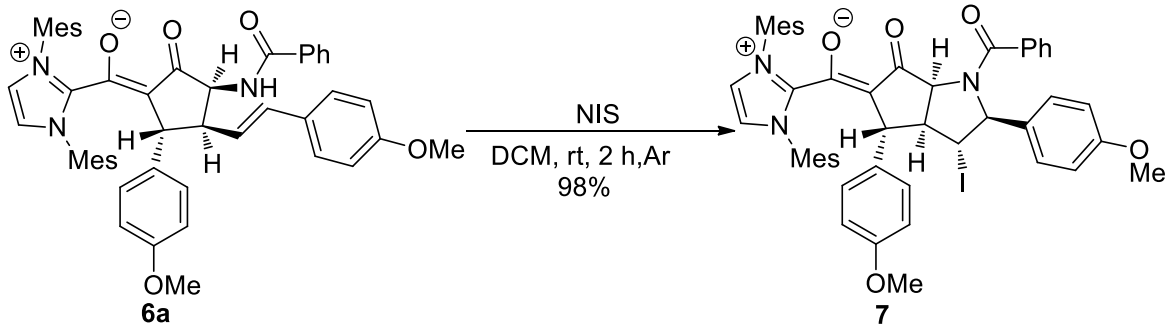
- Wang, D.; Wei,Y.; Shi, M.; *Chem. Commun.*, **2012**, *48*, 2764–2766.

General procedure for the synthesis of fully substituted cyclopentanones.



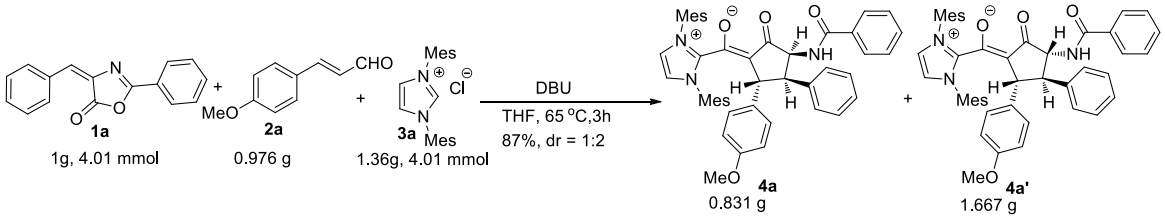
To a solution of 4-benzylidene-2-phenyloxazol-5(4H)-one **1a** (0.20 mmol), 4-methoxy cinnamaldehyde **2a** (0.30 mmol) and imidazolium chloride **3a** (0.20 mmol) in THF (4 ml) taken in a screw-capped test tube, equipped with a magnetic stirrer, was added base DBU (0.22 mmol). Then the reaction mixture was stirred at 65 °C for 30 minutes. The solvent was evaporated and crude residue was purified by column chromatography on 100-200 silica gel using 1:1 mixture of ethyl acetate and hexane as eluent to afford the cyclopentanone derivative. The above procedure was utilized to synthesise all the cyclopentanone derivatives reported in the paper.

Procedure for the synthesis of cyclopentanone fused tetrahydropyrrole derivative.



A solution of 3-benzamido-5-(4-methoxyphenyl)-4-(4-methoxystyryl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate **6** (0.10 mmol) and NIS (N-Iodosuccinimide) (0.11 mmol) in dry dichloromethane (2 ml) was allowed to stir at room temperature for 2 hours under argon atmosphere. The reaction mixture on conventional work up and column chromatography by using 100-200 silica gel and 1:1 hexane and ethyl acetate mixture afforded the product cyclopentanone fused tetrahydropyrrole derivative **7**.

Procedure for the gram scale synthesis of cyclopentanone derivative.



To 250 ml round bottom flask equipped with a condenser and magnetic stirrer, was taken 4-benzylidene-2-phenyloxazol-5(4H)-one **1a** (1g, 4.01 mmol), 4-methoxy cinnamaldehyde **2a** (0.976g, 6.02 mmol) and imidazolium chloride **3a** (1.364g, 4.01 mmol). To this added THF (100 ml) followed by the base DBU (0.659 ml, 4.41 mmol). Then the reaction mixture was refluxed at 65 ^{o}C for 3 hour. The solvent was evaporated and crude residue was purified by column chromatography on 100-200 silica gel using 1:1 mixture of ethyl acetate and hexane as eluent to afford the cyclopentanone derivative.

Single crystal X-ray structures

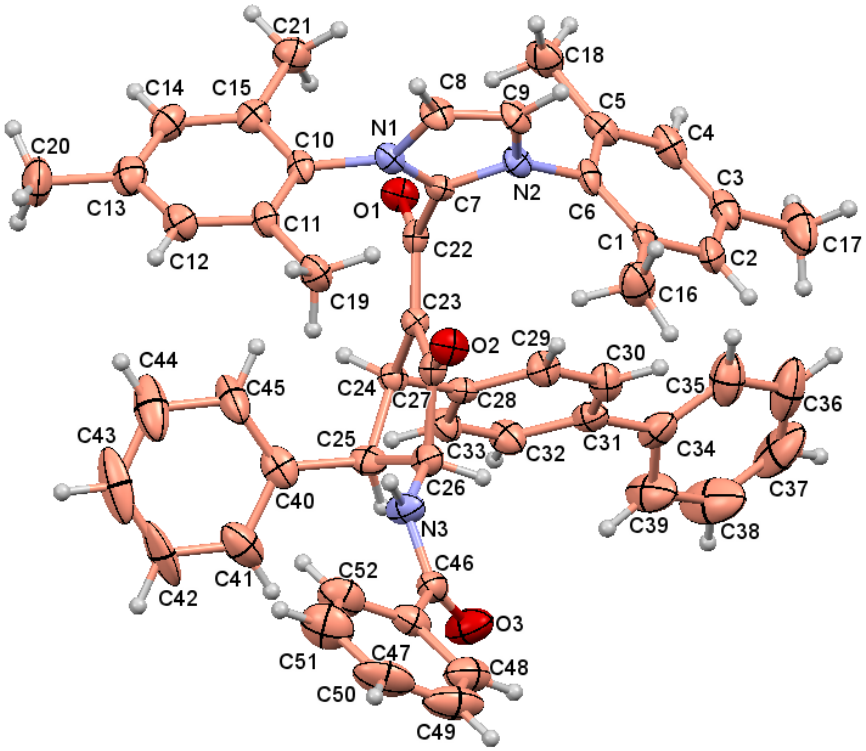


Fig. 1. Single crystal X-ray structure of **4r (CCDC 1568078)**.

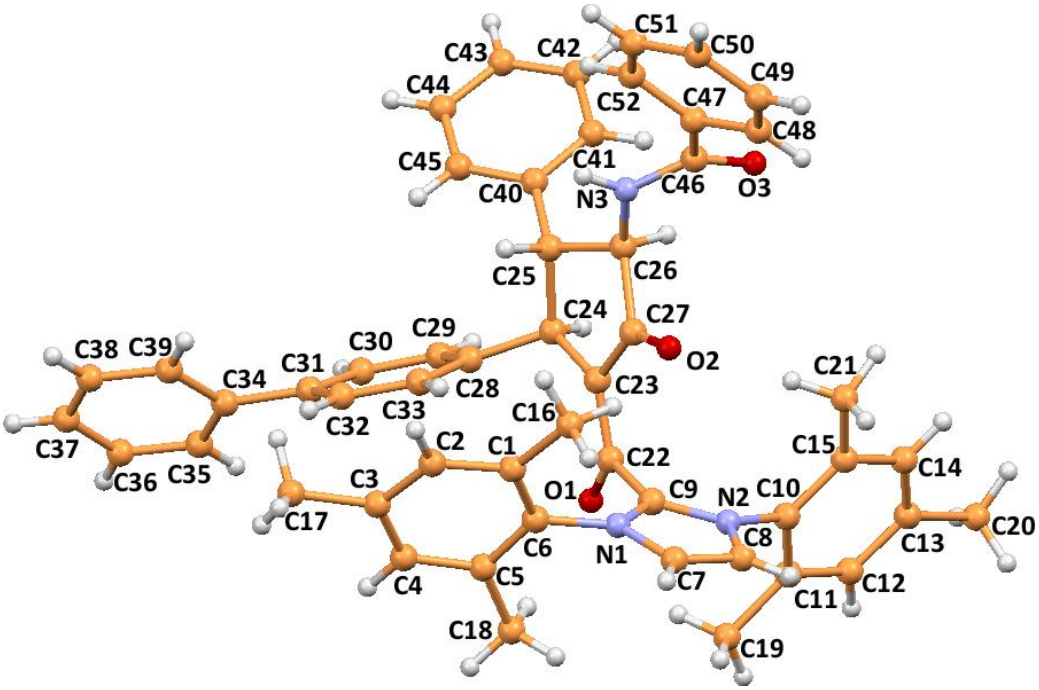


Fig. 2. Crystal structure of the **4r' (CCDC 1566555)**

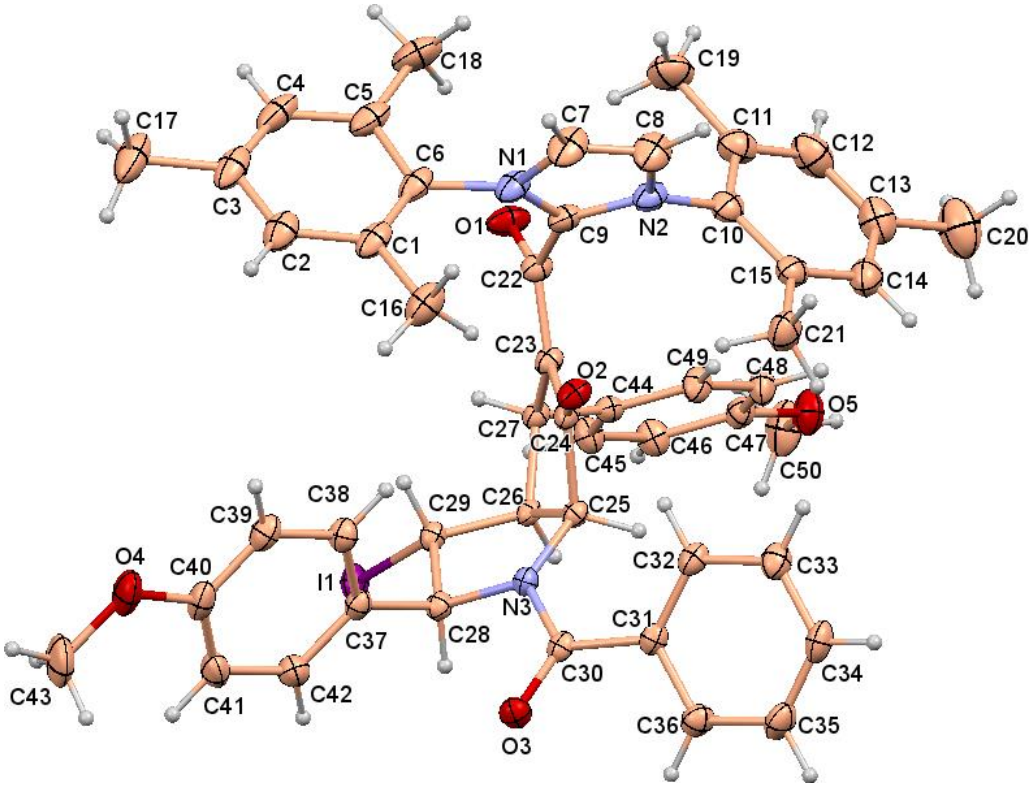
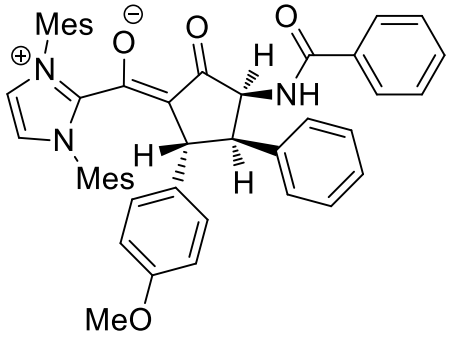


Fig. 3. Single crystal X-ray structure of **7 (CCDC 1568080).**

Characterization data of compounds.

4a. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



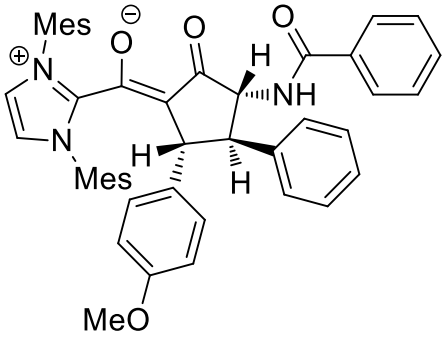
Chemical Formula: $C_{47}H_{45}N_3O_4$, Yellow solid; M.P: 248-250 ^oC, Yield: 45 mg (31%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.38 – 7.34 (m, 1H), 7.30 - 7.29 (m, 2H), 7.27 - 7.25 (m, 3H), 7.22 (d, *J* = 2.0 Hz, 1H), 7.12 - 7.08 (m, 3H), 7.02 - 6.97 (m, 4H), 6.85 (d, *J* = 7.5 Hz, 2H), 6.50 (s, 4H), 5.89 (d, *J* = 6.5 Hz, 1H), 4.69 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.16 (s, 1H), 3.74 (s, 3H), 3.58 (d, *J* = 8.0 Hz, 1H), 2.47 (s, 3H), 2.43 (s, 3H), 2.41 (s, 3H), 2.37 (s, 3H), 2.30 (s, 3H), 2.16 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.52, 167.88, 157.45, 149.58, 142.16, 140.57, 140.33, 136.93, 136.61, 136.03, 135.90, 135.09, 131.10, 131.05, 130.89, 129.94, 129.83, 129.78, 129.20, 128.13, 128.00, 127.94, 127.91, 126.86, 126.23, 121.86, 113.82, 113.38, 109.51, 59.49, 55.20, 52.79, 47.20, 21.21, 18.42, 18.33, 18.32, 18.14.

IR (film) ν_{max} : 3400, 1719, 1642, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_4$ is 716.3488; found 716.3459.

4a'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



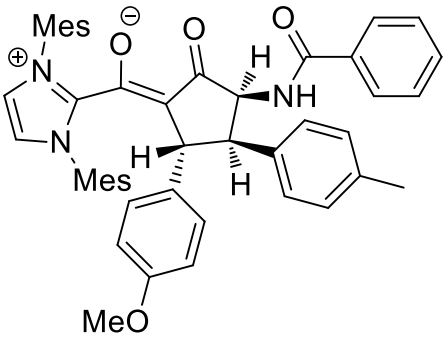
Chemical Formula: $C_{47}H_{45}N_3O_4$, Yellow solid; M.P: 145-147 ^oC, Yield: 90 mg (63%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.57 (d, *J* = 7.0 Hz, 2H), 7.42 (t, *J* = 7.0 Hz, 1H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.16 – 7.10 (m, 5H), 7.04 (s, 1H), 7.01 (s, 3H), 6.92 (s, 1H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.26 (d, *J* = 9.0 Hz, 2H), 6.06 (d, *J* = 8.0 Hz, 1H), 4.64 (t, *J* = 8.5 Hz, 1H), 3.88 (d, *J* = 7.0 Hz, 1H), 3.70 (s, 3H), 2.71 – 2.64 (m, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.35 (s, 3H), 2.35 (s, 3H), 2.22 (s, 3H), 2.10 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.15, 167.10, 160.07, 157.16, 149.37, 141.92, 140.54, 140.31, 137.08, 136.75, 136.54, 136.46, 136.09, 134.83, 131.42, 131.16, 131.08, 129.77, 129.69, 129.63, 128.20, 127.98, 127.88, 127.73, 127.03, 126.24, 121.93, 121.66, 113.14, 109.41, 62.99, 58.39, 55.05, 49.72, 21.27, 21.13, 18.51, 18.45, 18.40, 18.13.

IR (film) ν_{max} : 3336, 1714, 1648, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_4$ is 716.3488; found 716.3483.

4b. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.

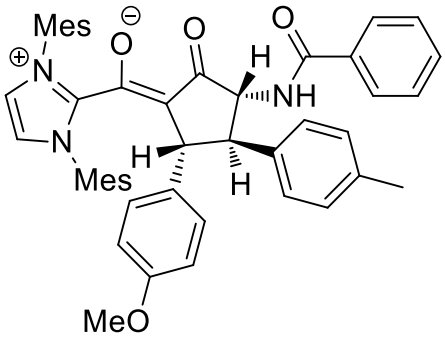


Chemical Formula: $C_{48}H_{47}N_3O_4$, White solid; M.P: 259 - 261 ^oC, Yield: 42 mg (29%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.37 – 7.32 (m, 3H), 7.26 (d, *J* = 8.0 Hz, 2H), 7.24 (d, *J* = 1.5 Hz, 1H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.08 (s, 1H), 7.01 (s, 1H), 6.96 (s, 1H), 6.80 (d, *J* = 8.0 Hz, 2H), 6.72 (d, *J* = 8.0 Hz, 2H), 6.49 (s, 4H), 5.92 (d, *J* = 6.5 Hz, 1H), 4.67 (t, *J* = 7.0 Hz, , 1H), 4.11 (s, 1H), 3.73 (s, 3H), 3.54 (d, *J* = 7.9 Hz, 1H), 2.46 (s, 3H), 2.43 (s, 3H), 2.40 (s, 3H), 2.38 (s, 3H), 2.29 (s, 3H), 2.26 (s, 3H), 2.15 (s, 3H).

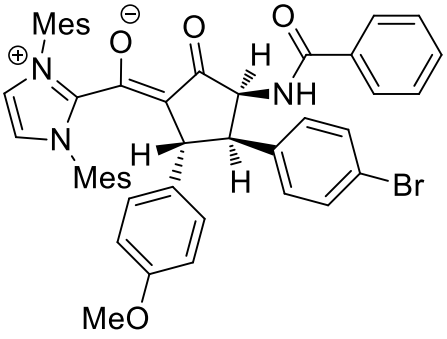
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.60, 167.73, 158.68, 157.39, 149.77, 140.45, 140.31, 139.12, 136.93, 136.68, 136.64, 136.08, 135.90, 135.37, 135.21, 131.14, 131.09, 130.83, 129.86, 129.81, 129.76, 129.28, 128.60, 128.11, 127.93, 127.86, 126.88, 121.80, 121.76, 113.34, 109.34, 59.43, 55.20, 52.43, 47.35, 21.19, 21.07, 18.42, 18.35, 18.29, 18.20.
IR (film) ν_{max} : 3405, 1721, 1641, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_4$ is 730.3645; found 730.3661.

4b'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{48}H_{47}N_3O_4$, White solid; M.P: 147-149 ^oC, Yield: 98 mg (67%)
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.58 – 7.56 (m, 2H), 7.41 (t, *J* = 7.0 Hz, 1H), 7.33 (t, *J* = 7.5 Hz, 2H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.14 (d, *J* = 2.0 Hz, 1H), 7.10 (s, 1H), 7.04 (s, 1H), 7.00 (s, 1H), 6.94 - 6.88 (m, 5H), 6.43 (d, *J* = 8.0 Hz, 2H), 6.26 (d, *J* = 8.5 Hz, 2H), 6.00 (d, *J* = 8.0 Hz, 1H), 4.62 (dd, J = 8.5, 8.0 Hz, 1H), 3.85 (d, *J* = 7.5 Hz, 1H), 3.70 (s, 3H), 2.62 (dd, *J* = 9.0, 7.5 Hz, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.36 (s, 3H), 2.35 (s, 3H), 2.24 (s, 3H), 2.22 (s, 3H). 2.10 (s, 3H)
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.25, 167.06, 159.98, 157.12, 149.40, 140.47, 140.26, 138.82, 137.08, 136.87, 136.52, 136.45, 136.09, 135.47, 134.90, 131.44, 131.19, 131.04, 129.73, 129.66, 129.63, 129.57, 128.70, 128.18, 127.76, 127.70, 127.01, 121.93, 121.65, 113.10, 109.45, 63.00, 58.01, 55.03, 49.75, 21.25, 21.11, 18.50, 18.43, 18.39, 18.13.
IR (film) ν_{max} : 3416, 1727, 1646, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_4$ is 730.3645; found 730.3648.

4c. (Z)-(3-benzamido-4-(4-bromophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



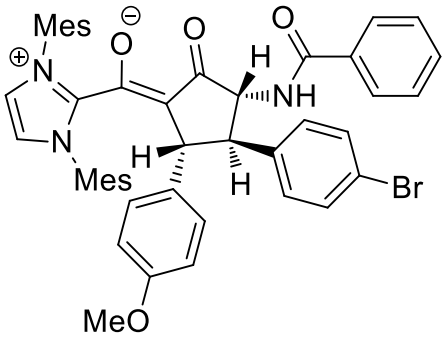
Chemical Formula: $C_{47}H_{44}BrN_3O_4$, White solid; M.P: 230 - 232 ^oC, Yield: 39 mg (25%)
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.33 - 7.29 (m, 3H), 7.24 – 7.16 (m, 4H), 7.04 - 6.96 (m, 5H), 6.89 (s, 1H), 6.63 (d, *J* = 8.5 Hz, 2H), 6.42 (s, 4H), 5.98 (d, *J* = 5.5 Hz, 1H), 4.53 – 4.50 (m,

1H), 4.01 (s, 1H), 3.66 (s, 3H), 3.54 (d, *J* = 7.8 Hz, 1H), 2.38 (s, 6H), 2.32 (s, 3H), 2.29 (s, 3H), 2.23 (s, 3H), 2.08 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.88, 167.83, 158.94, 157.56, 149.57, 141.25, 140.71, 140.43, 136.97, 136.67, 136.10, 136.02, 135.82, 134.88, 131.06, 131.02, 130.86, 129.93, 129.82, 129.78, 129.34, 129.21, 128.27, 127.93, 126.82, 121.91, 121.84, 119.83, 113.88, 113.43, 109.04, 59.50, 55.21, 52.26, 47.18, 21.18, 21.17, 18.37, 18.36, 18.24, 18.16.

IR (film) ν_{max} : 3395, 1717, 1641, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}BrN_3O_4$ is 794.2593; found 794.2585.

4c'. (Z)-(3-benzamido-4-(4-bromophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



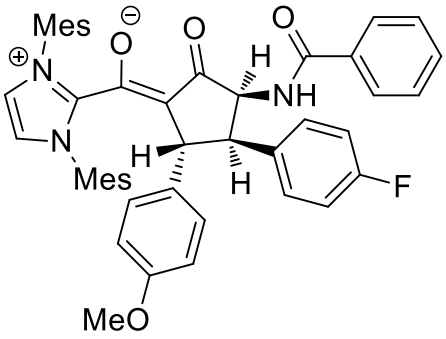
Chemical Formula: $C_{47}H_{44}BrN_3O_4$, White solid; M.P: 84 - 86 ^{o}C, Yield: 78 mg (49%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.57 – 7.56 (m, 2H), 7.44 - 7.41 (m, 1H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.24 (d, *J* = 8.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.16 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.04 (s, 1H), 7.00 (s, 1H), 6.92 (s, 1H), 6.87 (d, *J* = 8.5 Hz, 2H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.23 (d, *J* = 8.5 Hz, 2H), 6.08 (d, *J* = 8.0 Hz, 1H), 4.60 (dd, *J* = 9.0, 8.0 Hz, 1H), 3.79 (d, *J* = 7.5 Hz, 1H), 3.71 (s, 3H), 2.61 (dd, *J* = 8.5, 7.5 Hz, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.36 (s, 3H), 2.33 (s, 3H), 2.21 (s, 3H), 2.09 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.61, 167.33, 160.16, 157.27, 149.20, 140.95, 140.62, 140.38, 137.08, 136.52, 136.35, 136.27, 136.00, 134.67, 131.37, 131.21, 131.11, 131.02, 129.74, 129.65, 128.26, 127.71, 127.00, 122.00, 121.71, 120.03, 113.18, 109.22, 62.58, 58.19, 55.06, 49.90, 21.26, 21.13, 18.49, 18.41, 18.39, 18.10.

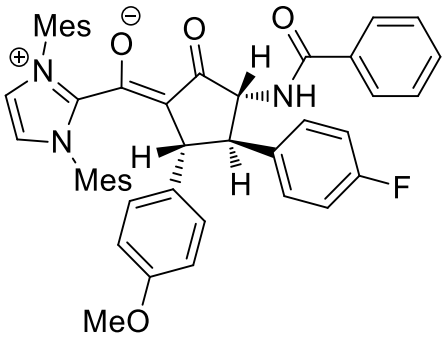
IR (film) ν_{max} : 3341, 1725, 1646, 1608 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}BrN_3O_4$ is 794.2593; found 794.2616.

4d. (Z)-(3-benzamido-4-(4-fluorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



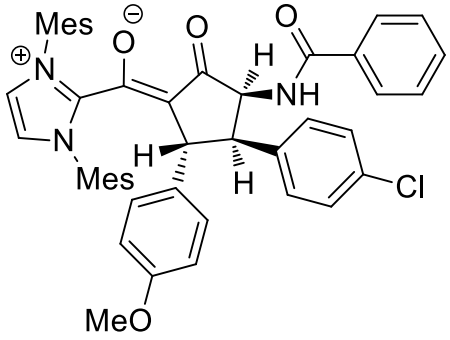
Chemical Formula: $C_{47}H_{44}FN_3O_4$, White solid; M.P: 217-219 ^oC, Yield: 48 mg (33%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.39 - 7.33 (m, 3H), 7.29 (d, *J* = 7.5 Hz, 2H), 7.26 (d, *J* = 2.0 Hz, 1H), 7.22 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.07 (s, 1H), 7.03 (s, 1H), 6.96 (s, 1H), 6.79 (dd, *J* = 8.5, 5.5 Hz, 2H), 6.66 (t, *J* = 8.5 Hz, 2H), 6.49 (s, 4H), 6.00 (d, *J* = 5.5 Hz, 1H), 4.60 (dd, *J* = 7.5, 5.5 Hz, 1H), 4.11 (s, 1H), 3.73 (s, 3H), 3.62 (d, *J* = 7.5 Hz, 1H), 2.46 (s, 3H), 2.43 (s, 3H), 2.40 (s, 3H), 2.35 (s, 3H), 2.30 (s, 3H), 2.15 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.05, 167.80, 158.90, 157.49, 149.57, 140.66, 140.37, 137.03, 136.62, 136.28, 135.99, 135.82, 134.95, 131.02, 129.92, 129.89, 128.23, 127.92, 126.77, 121.85, 114.53, 114.36, 113.38, 109.13, 59.59, 55.20, 51.98, 47.27, 21.18, 18.41, 18.34, 18.28, 18.13.
IR (film) ν_{max} : 3403, 1718, 1641, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}FN_3O_4$ is 734.3394; found 734.3399.

4d'. (Z)-(3-benzamido-4-(4-fluorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



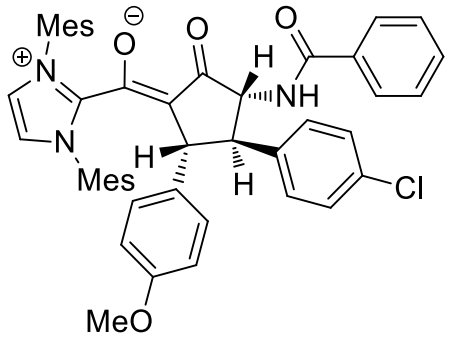
Chemical Formula: $C_{47}H_{44}FN_3O_4$, White solid; M.P: 123-125 ^oC, Yield: 96 mg (65%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.58 (d, *J* = 7.5 Hz, 2H), 7.42 (t, *J* = 7.5 Hz, 1H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.15 (d, *J* = 2.0 Hz, 1H), 7.12 (s, 1H), 7.04 (s, 1H), 7.00 (s, 1H), 6.95 (dd, *J* = 8.5, 5.5 Hz, 2H), 6.92 (s, 1H), 6.81 (t, *J* = 8.5 Hz, 2H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.23 (d, *J* = 8.5 Hz, 2H), 6.18 (d, *J* = 8.0 Hz, 1H), 4.63 – 4.60 (m, 1H), 3.80 (d, *J* = 7.5 Hz, 1H), 3.70 (s, 3H), 2.67 – 2.64 (m, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.35 (s, 3H), 2.33 (s, 3H), 2.21 (s, 3H), 2.08 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.82, 167.36, 162.45, 160.51, 160.30, 157.22, 149.14, 140.60, 140.37, 137.39, 137.37, 137.02, 136.52, 136.40, 136.35, 136.01, 134.70, 131.35, 131.16, 131.10, 129.78, 129.70, 129.64, 129.32, 129.26, 128.23, 127.72, 127.03, 122.02, 121.74, 114.81, 114.65, 113.13, 109.38, 62.78, 57.86, 55.04, 49.97, 21.26, 21.12, 18.48, 18.41, 18.40, 18.09.
IR (film) ν_{max} : 3360, 1717, 1646, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}FN_3O_4$ is 734.3394; found 734.3408.

4e. (Z)-(3-benzamido-4-(4-chlorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{47}H_{44}ClN_3O_4$, Yellow solid; M.P: 253 -255 ^oC, Yield: 43 mg (29%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.40 - 7.35 (m, 3H), 7.29 (t, *J* = 7.5 Hz, 2H), 7.25 (d, *J* = 2.0 Hz, 1H), 7.22 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.08 (s, 1H), 7.03 (s, 1H), 6.96 (s, 1H), 6.92 (d, *J* = 8.0 Hz, 2H), 6.76 (d, *J* = 8.5 Hz, 2H), 6.49 (s, 4H), 6.01 (d, *J* = 5.5 Hz, 1H), 4.57 (dd, *J* = 7.5, 5.0 Hz, 1H), 4.08 (s, 1H), 3.73 (s, 3H), 3.63 (d, *J* = 8.0 Hz, 1H), 2.46 (s, 3H), 2.45 (s, 3H), 2.39 (s, 3H), 2.37 (s, 3H), 2.30 (s, 3H), 2.15 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.81, 167.80, 158.91, 157.52, 149.53, 140.74, 140.69, 140.40, 136.99, 136.67, 136.15, 136.02, 135.81, 134.89, 131.65, 131.08, 131.05, 129.94, 129.83, 129.82, 129.38, 129.30, 128.29, 127.94, 127.88, 126.78, 121.92, 121.86, 113.40, 108.96, 59.55, 55.20, 52.19, 47.19, 21.21, 21.19, 18.41, 18.37, 18.26, 18.18.
IR (film) ν_{max} : 3409, 1721, 1646, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}ClN_3O_4$ is 750.3099; found 750.3115.

4e'. (Z)-(3-benzamido-4-(4-chlorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.

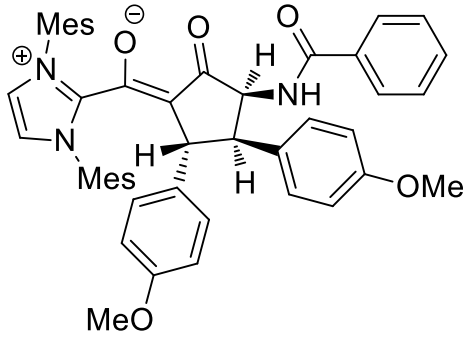


Chemical Formula: $C_{47}H_{44}ClN_3O_4$, Yellow solid; M.P: 132-134 ^oC, Yield: 87 mg (58%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.57 (d, *J* = 8.0 Hz, 2H), 7.43 (t, *J* = 7.5 Hz, 1H), 7.34 (t, *J* = 8.0 Hz, 2H), 7.22 (d, *J* = 2.0 Hz, 1H), 7.16 (d, *J* = 1.5 Hz, 1H), 7.11 (s, 1H), 7.09 (d, *J* = 8.5 Hz, 2H), 7.04 (s, 1H), 7.00 (s, 1H), 6.93 (d, *J* = 8.0 Hz, 3H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.23 (d, *J* = 8.5 Hz, 2H), 6.07 (d, *J* = 7.5 Hz, 1H), 4.60 (t, *J* = 8.5 Hz, 1H), 3.79 (d, *J* = 7.0 Hz, 1H), 3.71 (s, 3H), 2.61 (t, *J* = 8.0 Hz, 1H), 2.52 (s, 3H), 2.48 (s, 3H), 2.36 (s, 3H), 2.33 (s, 3H), 2.21 (s, 3H), 2.09 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.62, 167.32, 160.12, 157.25, 149.24, 140.62, 140.38, 137.10, 136.53, 136.34, 136.28, 136.00, 134.69, 131.82, 131.38, 131.19, 131.12, 129.74,

129.65, 129.25, 128.26, 128.09, 127.70, 127.00, 121.98, 121.69, 113.16, 109.21, 62.63, 58.20, 55.05, 49.94, 21.26, 21.12, 18.50, 18.43, 18.40, 18.11.

IR (film) ν_{max} : 3337, 1722, 1645, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}ClN_3O_4$ is 750.3099; found 750.3112.

4f. (Z)-(3-benzamido-4,5-bis(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



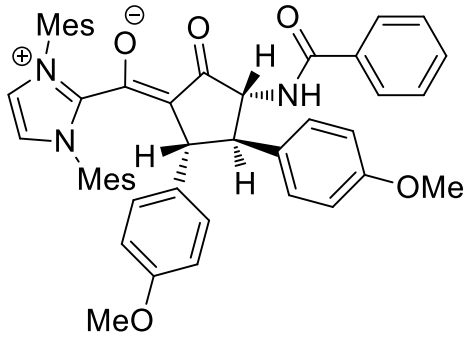
Chemical Formula: $C_{48}H_{47}N_3O_5$, Yellow solid; M.P: 253 - 255 ^oC, Yield: 49 mg (33%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.37 - 7.33 (m, 3H), 7.28 – 7.25 (m, 3H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.08 (s, 1H), 7.02 (s, 1H), 6.96 (s, 1H), 6.76 (d, *J* = 8.5 Hz, 2H), 6.55 (d, *J* = 9.0 Hz, 2H), 6.49 (s, 4H), 5.90 (d, *J* = 6.0 Hz, 1H), 4.65 – 4.62 (m, 1H), 4.11 (s, 1H), 3.74 (s, 3H), 3.73 (s, 3H), 3.54 (d, *J* = 8.0 Hz, 1H), 2.46 (s, 3H), 2.43 (s, 3H), 2.40 (s, 3H), 2.36 (s, 3H), 2.30 (s, 3H), 2.16 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.50, 167.70, 158.64, 157.86, 157.40, 149.78, 140.49, 140.31, 137.03, 136.66, 136.60, 136.06, 135.92, 135.16, 134.38, 131.16, 131.09, 130.88, 129.89, 129.85, 129.77, 129.18, 128.95, 128.15, 127.93, 126.84, 121.78, 113.34, 113.24, 109.26, 59.55, 55.20, 55.14, 51.97, 47.29, 21.22, 21.19, 18.44, 18.35, 18.30, 18.17.

IR (film) ν_{max} : 3402, 1734, 1641, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_5$ is 746.3594; found 746.3597.

4f'. (Z)-(3-benzamido-4,5-bis(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{48}H_{47}N_3O_5$, Yellow solid; M.P: 130 - 132 ^oC, Yield: 50 mg (34%)

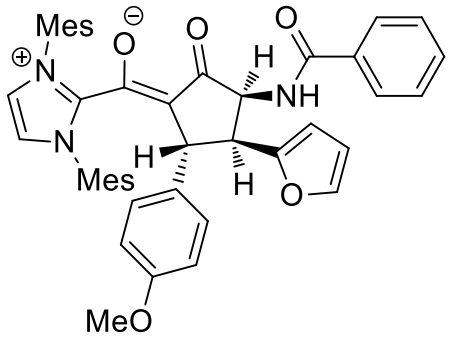
^1H NMR (500 MHz, $CDCl_3$) δ 7.58 (d, *J* = 7.5 Hz, 2H), 7.42 (t, *J* = 7.5 Hz, 1H), 7.33 (t, *J* = 7.5 Hz, 2H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.14 (d, *J* = 2.0 Hz, 1H), 7.10 (s, 1H), 7.04 (s, 1H), 7.00 (s, 1H), 6.91 (d, *J* = 8.5 Hz, 3H), 6.67 (d, *J* = 8.5 Hz, 2H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.25 (d, *J* = 8.5 Hz, 2H), 6.01 (t, *J* = 7.0 Hz, 1H), 4.62 (t, *J* = 8.5 Hz, 1H), 3.81 (d, *J* = 7.5 Hz, 1H),

3.72 (s, 3H), 3.70 (s, 3H), 2.61 - 2.58 (t, *J* = 8.5 Hz, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.35 (s, 3H), 2.35 (s, 3H), 2.22 (s, 3H), 2.10 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.25, 167.16, 159.93, 157.94, 157.12, 149.42, 140.52, 140.31, 137.10, 136.71, 136.55, 136.44, 136.10, 134.88, 133.83, 131.44, 131.18, 131.08, 129.76, 129.68, 129.62, 128.81, 128.20, 127.76, 127.03, 121.92, 121.64, 113.37, 113.09, 109.42, 62.86, 57.77, 55.07, 55.05, 49.86, 21.26, 21.13, 18.52, 18.45, 18.41, 18.13.

IR (film) ν_{max} : 3412, 1733, 1645, 1608 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_5$ is 746.3594; found 746.3613.

4g. (Z)-(3-benzamido-4-(furan-2-yl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



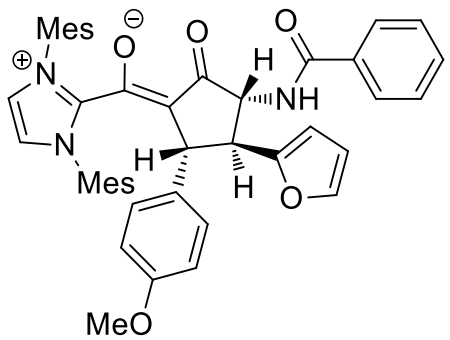
Chemical Formula: $C_{45}H_{43}N_3O_5$, Yellow solid; M.P: 148 - 150 ^oC, Yield: 36 mg (26%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.48 - 7.46 (m, 2H), 7.42 – 7.39 (m, 1H), 7.33 - 7.30 (m, 2H), 7.26 - 7.25 (m, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.11 – 7.10 (m, 2H), 7.01 (s, 1H), 6.99 (s, 1H), 6.97 (s, 1H), 6.53 – 6.49 (m, 4H), 6.08 - 6.07 (m, 2H), 5.52 (d, *J* = 3.0 Hz, 1H), 4.60 – 4.57 (m, 1H), 4.10 (s, 1H), 3.74 (s, 3H), 2.46 (s, 3H), 2.42 (s, 3H), 2.38 (s, 3H), 2.38 (s, 3H), 2.27 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.99, 167.88, 159.19, 157.57, 156.52, 149.55, 140.74, 140.48, 140.30, 136.74, 136.59, 136.04, 135.97, 135.64, 134.99, 132.89, 131.16, 131.06, 130.99, 129.91, 129.73, 129.69, 129.20, 128.19, 127.99, 127.02, 121.88, 121.84, 113.83, 113.39, 109.85, 108.94, 105.43, 58.61, 55.20, 47.06, 46.12, 21.19, 21.15, 18.43, 18.33, 18.29, 18.08.

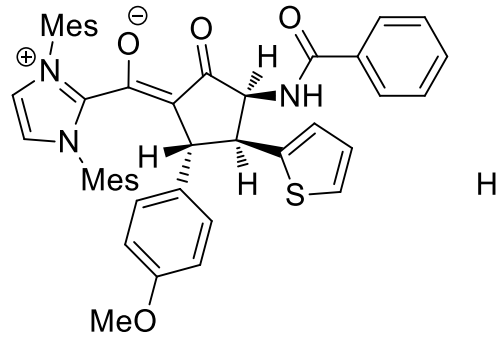
IR (film) ν_{max} : 3404, 1718, 1644, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{45}H_{43}N_3O_5$ is 706.3281; found 706.3283.

4g'. (Z)-(3-benzamido-4-(furan-2-yl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



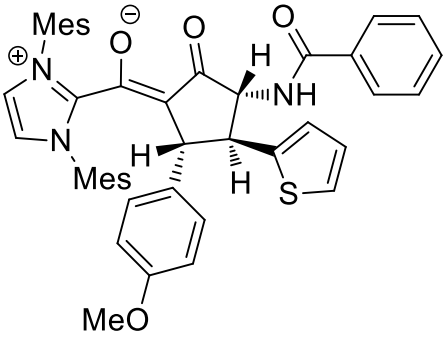
Chemical Formula: $C_{45}H_{43}N_3O_5$, Yellow solid; M.P: 143 - 145 ^oC, Yield: 71 mg (50%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.64 (d, *J* = 7.5 Hz, 2H), 7.45 – 7.41 (m, 1H), 7.37 - 7.34 (m, 2H), 7.27 (d, *J* = 0.5 Hz, 1H), 7.19 (d, *J* = 2.0 Hz, 1H), 7.13 (d, *J* = 2.0 Hz, 1H), 7.10 (s, 1H), 7.03 (s, 1H), 6.96 (s, 1H), 6.89 (s, 1H), 6.47 (d, *J* = 8.5 Hz, 2H), 6.34 (d, *J* = 8.5 Hz, 2H), 6.18 – 6.16 (m, 2H), 5.85 (d, *J* = 3.5 Hz, 1H), 4.62 (dd, *J* = 9.5, 7.5 Hz, 1H), 3.96 (d, *J* = 8.0 Hz, 1H), 3.71 (s, 3H), 2.80 – 2.66 (m, 1H), 2.51 (s, 3H), 2.47 (s, 3H), 2.33 (s, 3H), 2.31 (s, 3H), 2.19 (s, 3H), 2.07 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.26, 167.30, 160.16, 157.20, 154.91, 149.21, 141.24, 140.53, 140.31, 137.00, 136.53, 136.48, 136.39, 135.95, 134.85, 131.38, 131.14, 129.80, 129.65, 129.62, 129.53, 128.24, 127.78, 127.08, 121.93, 121.67, 113.12, 109.97, 106.03, 60.92, 55.04, 51.70, 46.89, 21.25, 21.09, 18.53, 18.43, 18.40, 18.06.
IR (film) ν_{max} : 3403, 1721, 1656, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{45}H_{43}N_3O_5$ is 706.3281; found 706.3290.

4h. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(thiophen-2-yl)cyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{45}H_{43}N_3O_4S$, Yellow solid; M.P: 148-150 ^oC, Yield: 38 mg (26%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.40 – 7.36 (m, 3H), 7.30 - 7.27 (m, 2H), 7.25 (d, *J* = 2.0 Hz, 1H), 7.23 (d, *J* = 1.5 Hz, 1H), 7.11 (s, 1H), 7.04 (s, 1H), 7.00 (s, 1H), 6.95 (s, 1H), 6.87 (d, *J* = 5.0 Hz, 1H), 6.69 (dd, *J* = 5.5, 3.5 Hz, 1H), 6.52 – 6.47 (m, 5H), 6.05 (d, *J* = 6.5 Hz, 1H), 4.58 (t, *J* = 6.5 Hz, 1H), 4.14 (s, 1H), 3.95 (d, *J* = 7.0 Hz, 1H), 3.73 (s, 3H), 2.46 (s, 3H), 2.44 (s, 3H), 2.40 (d, *J* = 1.1 Hz, 6H), 2.30 (s, 3H), 2.17 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.61, 167.72, 159.62, 157.55, 149.59, 145.18, 140.40, 140.37, 136.85, 136.78, 136.34, 136.18, 135.54, 135.10, 131.29, 131.07, 130.93, 129.76, 129.73, 129.48, 128.17, 127.98, 126.87, 125.86, 124.92, 123.06, 121.95, 121.77, 113.38, 108.27, 59.44, 55.20, 49.17, 48.70, 21.20, 21.17, 18.44, 18.38, 18.36, 18.23.
IR (film) ν_{max} : 3410, 1717, 1641, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{45}H_{43}N_3O_4S$ is 722.3053; found 722.3040.

4h'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(thiophen-2-yl)cyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



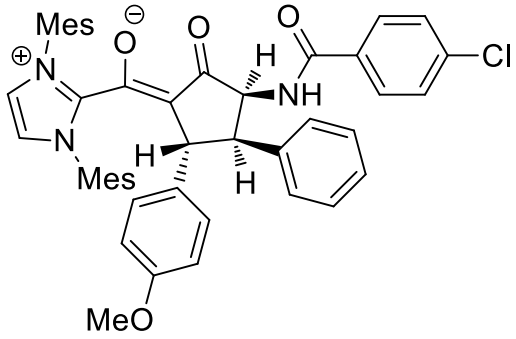
Chemical Formula: $C_{45}H_{43}N_3O_4S$, Yellow solid; M.P: 156 - 158 ^oC, Yield: 75 mg (52%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.61 (d, *J* = 7.5 Hz, 2H), 7.43 (t, *J* = 7.5 Hz, 1H), 7.37 - 7.33 (m, 2H), 7.19 (d, *J* = 2.0 Hz, 1H), 7.13 (d, *J* = 2.0 Hz, 1H), 7.11 (s, 1H), 7.03 (d, J = 4.5Hz, 2H), 6.98 (s, 1H), 6.91 (s, 1H), 6.78 (dd, *J* = 5.0, 4.0 Hz, 1H), 6.64 (d, *J* = 3.5 Hz, 1H), 6.47 (d, *J* = 9.0 Hz, 2H), 6.40 (d, *J* = 8.5 Hz, 2H), 6.10 (d, *J* = 8.0 Hz, 1H), 4.52 (t, *J* = 8.5 Hz, 1H), 3.91 (d, *J* = 7.5 Hz, 1H), 3.71 (s, 3H), 3.12 – 2.98 (m, 1H), 2.49 (s, 3H), 2.48 (s, 3H), 2.34 (s, 3H), 2.33 (s, 3H), 2.21 (s, 3H), 2.07 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.16, 167.19, 160.25, 157.30, 149.17, 145.33, 140.52, 140.30, 137.00, 136.47, 136.42, 136.09, 134.81, 131.38, 131.16, 129.80, 129.68, 129.57, 128.25, 127.94, 127.05, 126.40, 124.30, 123.23, 121.97, 121.69, 113.15, 109.37, 63.93, 55.05, 53.27, 50.25, 21.27, 21.12, 18.52, 18.42, 18.15.

IR (film) ν_{max} : 3405, 1717, 1641, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{45}H_{43}N_3O_4S$ is 722.3053; found 722.3079.

4i. (Z)-(3-(4-chlorobenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



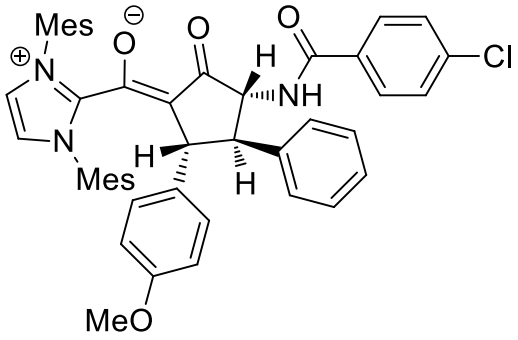
Chemical Formula: $C_{47}H_{44}ClN_3O_4$, Yellow solid; M.P: 143-145 ^oC, Yield: 45 mg (30%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.26 (d, *J* = 2.5 Hz, 1H), 7.23 – 7.21 (m, 5H), 7.12 - 7.08 (m, 3H), 7.02 – 6.99 (m, 3H), 6.97 (s, 1H), 6.83 (d, *J* = 7.5 Hz, 2H), 6.49 (s, 4H), 5.87 (d, *J* = 6.0 Hz, 1H), 4.69 – 4.66 (m, 1H), 4.15 (s, 1H), 3.74 (s, 3H), 3.56 (d, *J* = 8.0 Hz, 1H), 2.47 (s, 3H), 2.42 (s, 3H), 2.41 (s, 3H), 2.36 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.17, 166.71, 158.96, 157.46, 149.62, 142.15, 140.62, 140.37, 137.01, 136.97, 136.64, 136.52, 135.99, 135.82, 133.51, 131.10, 131.05, 129.92, 129.89, 129.82, 129.18, 128.39, 128.27, 127.96, 127.92, 126.26, 121.84, 113.39, 109.39, 59.53, 55.21, 52.79, 47.24, 21.22, 18.44, 18.35, 18.30, 18.16.

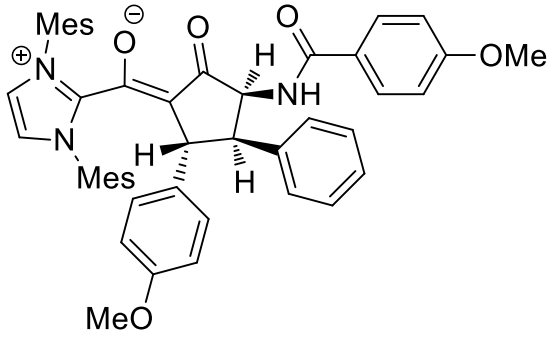
IR (film) ν_{max} : 3393, 1703, 1641, 1602 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}ClN_3O_4$ is 750.3099; found 750.3089.

4i'. (Z)-(3-(4-chlorobenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{47}H_{44}ClN_3O_4$, Yellow solid; M.P: 105-107 ^oC, Yield: 63 mg (42%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.50 (d, *J* = 8.5 Hz, 2H), 7.30 (d, *J* = 8.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.15 (d, *J* = 2.0 Hz, 1H), 7.12 (d, *J* = 7.0 Hz, 2H), 7.08 (s, 1H), 7.04 (s, 1H), 7.00 – 6.96 (m, 4H), 6.92 (s, 1H), 6.43 (d, *J* = 8.5 Hz, 2H), 6.25 (d, *J* = 8.5 Hz, 2H), 5.99 (t, *J* = 8.5 Hz, 1H), 4.60 (t, *J* = 8.5 Hz, 1H), 3.87 (d, *J* = 7.0 Hz, 1H), 3.70 (s, 3H), 2.66 (t, J = 7.5 Hz, 1H), 2.50 (s, 3H), 2.48 (s, 3H), 2.35 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H), 2.10 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.82, 166.04, 160.13, 157.19, 149.31, 141.83, 140.56, 140.34, 137.23, 137.11, 136.69, 136.54, 136.38, 136.02, 133.24, 131.41, 131.14, 129.72, 129.63, 129.16, 128.75, 128.63, 128.47, 128.45, 128.00, 127.85, 127.71, 127.42, 122.01, 121.97, 121.87, 121.69, 113.14, 109.30, 63.07, 58.36, 55.05, 49.75, 21.27, 21.13, 18.51, 18.44, 18.40, 18.12.
IR (film) ν_{max} : 3415, 1724, 1646, 1602 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{44}ClN_3O_4$ is 750.3099; found 750.3076.

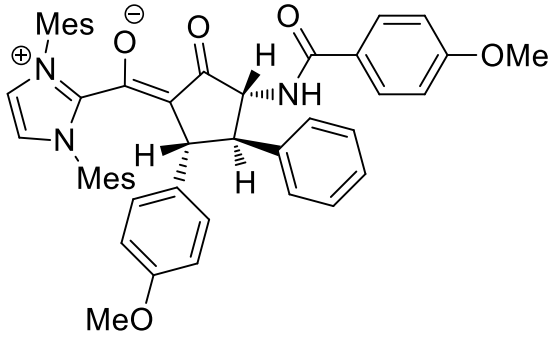
4j. (Z)-(1,3-dimesityl-1H-imidazol-3-ium-2-yl)(3-(4-methoxybenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)methanolate.



Chemical Formula: $C_{48}H_{47}N_3O_5$, Yellow solid; M.P: 170-172 ^oC, Yield: 48 mg (32%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.28 – 7.25 (m, 3H), 7.21 (d, *J* = 1.5 Hz, 1H), 7.11 – 7.08 (m, 3H), 7.02 – 6.98 (m, 3H), 6.95 (s, 1H), 6.84 (d, *J* = 7.5 Hz, 2H), 6.75 (d, *J* = 9.0 Hz, 2H), 6.49 (s, 4H), 5.85 (d, *J* = 6.5 Hz, 1H), 4.71 (t, J = 7.0 Hz, 1H), 4.14 (s, 1H), 3.76 (s, 3H), 3.73 (s, 3H), 3.55 (d, *J* = 8.0 Hz, 1H), 2.46 (s, 3H), 2.42 (s, 3H), 2.40 (s, 3H), 2.36 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).

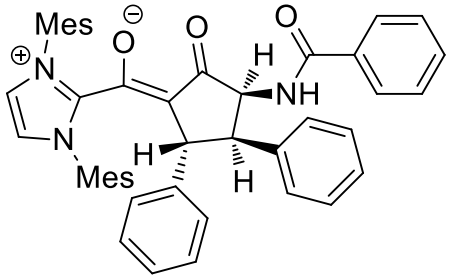
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.76, 167.30, 161.72, 158.78, 157.43, 149.69, 142.23, 140.57, 140.33, 136.97, 136.63, 136.58, 136.05, 135.90, 132.85, 131.12, 131.06, 129.94, 129.85, 129.78, 129.20, 128.63, 128.03, 127.96, 127.86, 127.42, 126.16, 121.82, 113.37, 113.33, 109.49, 59.40, 55.28, 55.22, 52.80, 47.11, 21.22, 18.45, 18.35, 18.33, 18.17.
IR (film) ν_{max} : 3403, 1715, 1640, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_5$ is 746.3594; found 746.3579.

4j'. (Z)-(1,3-dimesityl-1H-imidazol-3-ium-2-yl)(3-(4-methoxybenzamido)-5-(4-methoxy phenyl)-2-oxo-4-phenylcyclopentylidene)methanolate.



Chemical Formula: $C_{48}H_{47}N_3O_5$, Yellow solid; M.P: 128-130 ^oC, Yield: 49 mg (33%)
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.53 (d, *J* = 8.5 Hz, 2H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.14 (d, *J* = 2.0 Hz, 1H), 7.12 - 7.09 (m, 4H), 7.03 (s, 1H), 6.99 (d, *J* = 6.0 Hz, 3H), 6.91 (s, 1H), 6.82 (d, *J* = 8.5 Hz, 2H), 6.43 (d, *J* = 8.5 Hz, 2H), 6.26 (d, *J* = 8.5 Hz, 2H), 6.00 (t, *J* = 7.5 Hz, 1H), 4.62 (t, *J* = 8.4 Hz, 1H), 3.86 (d, *J* = 7.5 Hz, 1H), 3.80 (s, 3H), 3.70 (s, 3H), 2.71 – 2.65 (m, 1H), 2.50 (s, 3H), 2.48 (s, 3H), 2.35 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H), 2.09 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.40, 166.62, 161.84, 160.09, 157.14, 149.35, 142.00, 140.51, 140.28, 137.06, 136.79, 136.53, 136.50, 136.09, 131.42, 131.16, 129.77, 129.67, 129.63, 129.59, 129.19, 128.81, 127.96, 127.89, 127.75, 127.20, 126.19, 121.95, 121.68, 109.46, 62.91, 58.34, 55.04, 49.75, 21.27, 21.12, 18.51, 18.44, 18.40, 18.13.
IR (film) ν_{max} : 3424, 1721, 1643, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{47}N_3O_5$ is 746.3594; found 746.3581.

4k. (Z)-(3-benzamido-2-oxo-4,5-diphenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



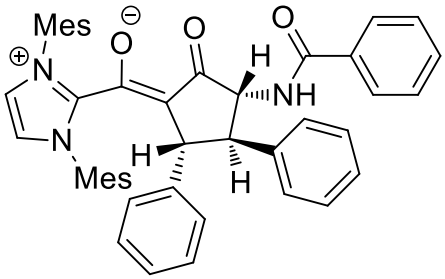
Chemical Formula: $C_{46}H_{43}N_3O_3$, White solid; M.P: 148-150 ^oC, Yield: 42 mg (31%)
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28 (t, *J* = 7.0 Hz, 1H), 7.21 (d, *J* = 7.0 Hz, 2H), 7.18 - 7.16 (m, 3H), 7.12 (d, *J* = 1.5 Hz, 1H), 7.03 - 7.01 (m, 3H), 6.95 - 6.92 (m, 4H), 6.87 – 6.84 (m, 3H), 6.78 (d, *J* = 7.0 Hz, 2H), 6.51 (d, *J* = 7.5 Hz, 2H), 5.82 (d, *J* = 6.0 Hz, 1H), 4.62 – 4.59

(m, 1H), 4.12 (s, 1H), 3.55 (d, *J* = 7.5 Hz, 1H), 2.38 (s, 3H), 2.35 (s, 3H), 2.33 (s, 3H), 2.29 (s, 3H), 2.21 (s, 3H), 2.06 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.37, 167.77, 158.83, 149.72, 144.40, 142.25, 140.54, 140.38, 136.97, 136.58, 136.02, 135.88, 135.19, 131.18, 131.09, 130.87, 129.91, 129.83, 129.76, 129.21, 128.15, 128.00, 127.89, 127.85, 127.09, 126.79, 126.20, 125.42, 121.85, 109.00, 59.50, 52.72, 48.11, 21.20, 21.17, 18.41, 18.35, 18.32, 18.18.

IR (film) ν_{max} : 3405, 1721, 1642, 1602cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{43}N_3O_3$ is 686.3383; found 686.3364.

4k'. (Z)-(3-benzamido-2-oxo-4,5-diphenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



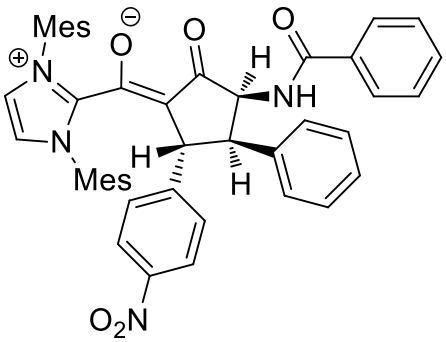
Chemical Formula: $C_{46}H_{43}N_3O_3$, White solid; M.P: 135-137 ^{o}C, Yield: 92 mg (67%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.56 – 7.54 (m, 2H), 7.41 (t, *J* = 7.5 Hz, 1H), 7.33 (t, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.15 (d, *J* = 2.0 Hz, 1H), 7.13 - 7.11 (m, 3H), 7.09 (s, 1H), 7.04 (s, 1H), 7.01 – 6.97 (m, 4H), 6.93 (s, 1H), 6.89 (t, *J* = 7.5 Hz, 2H), 6.37 (d, *J* = 7.5 Hz, 2H), 6.03 (d, *J* = 8.0 Hz, 1H), 4.63 (t, *J* = 8.0 Hz, 1H), 3.94 (d, *J* = 7.0 Hz, 1H), 2.72 (dd, *J* = 8.2, 7.1 Hz, 1H), 2.51 (s, 3H), 2.48 (s, 3H), 2.36 (s, 3H), 2.35 (s, 3H), 2.22 (s, 3H), 2.09 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.14, 167.05, 160.08, 149.39, 144.64, 142.04, 140.54, 140.35, 137.04, 136.53, 136.43, 136.08, 134.84, 131.39, 131.15, 131.07, 129.75, 129.71, 129.62, 128.20, 128.00, 127.82, 127.69, 127.00, 126.90, 126.26, 125.29, 121.93, 121.69, 109.22, 63.17, 58.22, 50.53, 21.26, 21.14, 18.52, 18.43, 18.39, 18.13.

IR (film) ν_{max} : 3426, 1722, 1644, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{43}N_3O_3$ is 686.3383; found 686.3362.

4l. (Z)-(-3-benzamido-5-(4-nitrophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl -1H-imidazol-3-ium-2-yl)methanolate.



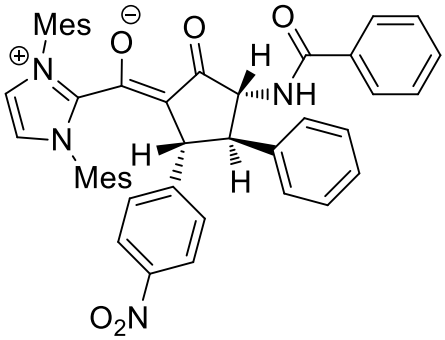
Chemical Formula: $C_{46}H_{42}N_4O_5$, Yellow solid; M.P: 216 - 218 ^{o}C, Yield: 42 mg (29%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.82 (d, *J* = 8.5 Hz, 2H), 7.39 – 7.36 (m, 1H), 7.31 - 7.29 (m, 3H), 7.28 – 7.24 (m, 3H), 7.15 - 7.10 (m, 3H), 7.04 - 6.99 (m, 4H), 6.84 (d, *J* = 7.0 Hz, 2H), 6.75 (d, *J* = 8.5 Hz, 2H), 5.92 (d, *J* = 6.0 Hz, 1H), 4.62 (dd, *J* = 7.5, 6.0 Hz, 1H), 4.26 (s, 1H), 3.63 (d, *J* = 8.0 Hz, 1H), 2.53 (s, 3H), 2.44 (s, 3H), 2.41 (s, 3H), 2.40 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.72, 167.89, 159.09, 152.58, 149.30, 146.04, 141.37, 140.96, 140.77, 136.83, 136.73, 136.17, 135.85, 134.84, 131.07, 130.94, 129.98, 129.91, 129.84, 129.31, 128.23, 128.06, 127.93, 127.83, 126.78, 126.60, 123.30, 122.02, 121.92, 108.21, 59.55, 52.00, 48.19, 21.21, 21.16, 18.36, 18.30, 18.21, 18.17.

IR (film) ν_{max} : 3412, 1717, 1643, 1598 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}N_4O_5$ is 731.3234; found 731.3220.

4l'. (Z)-(3-benzamido-5-(4-nitrophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



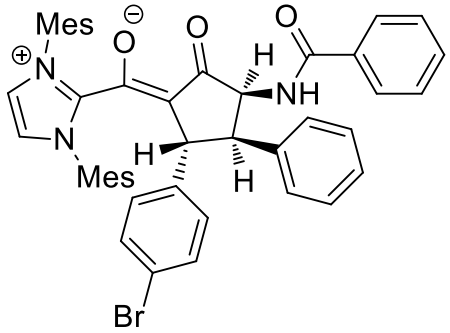
Chemical Formula: $C_{46}H_{42}N_4O_5$, Yellow solid; M.P: 158 - 160 ^oC, Yield: 85 mg (58%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.69 (d, *J* = 9.0 Hz, 2H), 7.64 (d, *J* = 7.0 Hz, 2H), 7.42 (t, *J* = 7.0 Hz, 1H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.24 (d, *J* = 2.0 Hz, 2H), 7.17 (d, *J* = 2.0 Hz, 1H), 7.15 - 7.13 (m, 3H), 7.05 (s, 1H), 7.01 - 6.96 (m, 3H), 6.92 (s, 1H), 6.46 (d, *J* = 8.5 Hz, 2H), 6.28 (d, *J* = 7.5 Hz, 1H), 4.59 (dd, *J* = 10.6, 7.5 Hz, 1H), 3.96 (d, *J* = 8.7 Hz, 1H), 2.78 (dd, *J* = 10.5, 8.9 Hz, 1H), 2.56 (s, 3H), 2.53 (s, 3H), 2.35 (d, *J* = 1.9 Hz, 6H), 2.19 (s, 3H), 2.05 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.33, 167.40, 160.02, 152.85, 148.73, 145.73, 140.79, 140.69, 140.49, 136.92, 136.72, 136.41, 135.96, 134.57, 131.27, 131.25, 131.05, 129.99, 129.76, 129.68, 129.62, 128.28, 128.24, 127.97, 127.70, 127.04, 126.79, 123.00, 122.19, 121.92, 108.82, 63.34, 57.39, 50.75, 21.29, 21.12, 18.49, 18.38, 18.30, 18.13.

IR (film) ν_{max} : 3425, 1720, 1645, 1596 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}N_4O_5$ is 731.3234; found 731.3253.

4m. (Z)-(3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimes ityl-1H-imidazol-3-ium-2-yl)methanolate.



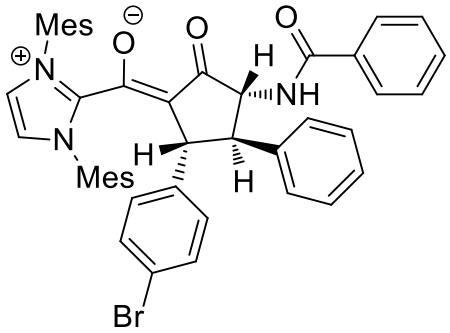
Chemical Formula: $C_{46}H_{42}BrN_3O_3$, White solid; M.P: 210 - 212 ^oC, Yield: 40 mg (26%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.38 – 7.35 (m, 1H), 7.30 - 7.28 (m, 2H), 7.27 - 7.25 (m, 3H), 7.23 (d, *J* = 2.0 Hz, 1H), 7.12 - 7.08 (m, 3H), 7.07 – 7.04 (m, 2H), 7.03 – 6.99 (m, 3H), 6.97 (s, 1H), 6.83 (d, *J* = 7.5 Hz, 2H), 6.49 (d, *J* = 8.0 Hz, 2H), 5.89 (d, *J* = 6.0 Hz, 1H), 4.63 (dd, *J* = 8.0, 6.0 Hz, 1H), 4.14 (s, 1H), 3.59 (d, *J* = 8.0 Hz, 1H), 2.47 (s, 3H), 2.42 (s, 3H), 2.39 (s, 3H), 2.37 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.04, 167.82, 158.86, 149.52, 143.50, 141.83, 140.63, 140.57, 136.90, 136.63, 136.02, 135.83, 135.02, 131.05, 130.98, 130.95, 130.89, 129.90, 129.87, 129.78, 129.23, 128.92, 128.17, 127.92, 126.78, 126.33, 121.88, 121.83, 119.08, 108.72, 59.47, 52.34, 47.54, 21.21, 21.16, 18.40, 18.33, 18.25, 18.16.

IR (film) ν_{max} : 3416, 1717, 1639, 1601 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}BrN_3O_3$ is 764.2489; found 764.2513.

4m'. (Z)-(3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



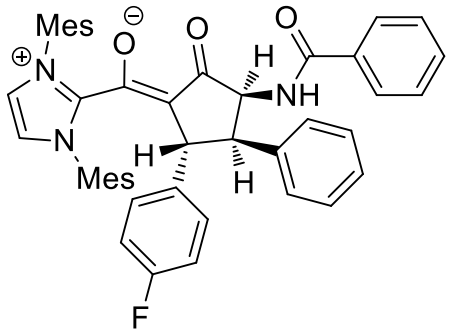
Chemical Formula: $C_{46}H_{42}BrN_3O_3$, White solid; M.P: 126 - 128 ^oC, Yield: 88 mg (58%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.60 – 7.59 (m, 2H), 7.42 (t, *J* = 7.5 Hz, 1H), 7.34 (t, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.16 – 7.12 (m, 5H), 7.05 (s, 1H), 7.00 – 6.96 (m, 5H), 6.93 (s, 1H), 6.21 (d, *J* = 8.5 Hz, 2H), 6.07 (d, *J* = 7.5 Hz, 1H), 4.62 (dd, *J* = 9.5, 8.0 Hz, 1H), 3.86 (d, *J* = 8.0 Hz, 1H), 2.65 (dd, *J* = 9.5, 8.0 Hz, 1H), 2.52 (s, 3H), 2.50 (s, 3H), 2.35 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H), 2.09 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.75, 167.30, 160.02, 149.06, 143.51, 141.20, 140.60, 140.48, 136.99, 136.47, 135.98, 134.70, 131.32, 131.19, 131.09, 130.62, 129.83, 129.67, 129.61, 128.75, 128.27, 128.08, 127.91, 126.99, 126.47, 122.04, 121.77, 118.86, 108.92, 63.02, 58.09, 50.11, 21.23, 21.11, 18.49, 18.37, 18.08.

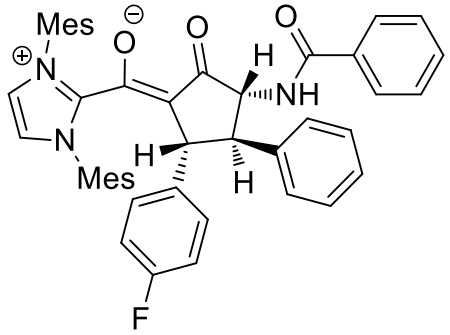
IR (film) ν_{max} : 3418, 1721, 1645, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}BrN_3O_3$ is 764.2489; found 764.2489.

4n. (Z)-(3-benzamido-5-(4-fluorophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{46}H_{42}FN_3O_3$, White solid; M.P: 255 - 257 ^oC, Yield: 45 mg (32%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.37 – 7.34 (m, 1H), 7.30 -7.29 (m, 2H), 7.26 - 7.25 (m, 3H), 7.23 (d, *J* = 2.0 Hz, 1H), 7.13 - 7.08 (m, 3H), 7.03 – 7.00 (m, 3H), 6.96 (s, 1H), 6.84 (d, *J* = 7.0 Hz, 2H), 6.62 (t, *J* = 8.5 Hz, 2H), 6.55 – 6.53 (m, 2H), 5.93 (d, *J* = 6.0 Hz, 1H), 4.66 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.17 (s, 1H), 3.58 (d, *J* = 8.5 Hz, 1H), 2.46 (s, 3H), 2.43 (s, 3H), 2.39 (s, 3H), 2.36 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.22, 167.90, 162.03, 160.11, 158.90, 149.51, 141.94, 140.64, 140.50, 139.93, 136.93, 136.64, 136.06, 135.86, 135.01, 131.06, 131.01, 130.97, 129.95, 129.87, 129.74, 129.23, 128.46, 128.40, 128.19, 127.95, 126.82, 126.34, 121.91, 121.87, 114.56, 114.39, 109.09, 59.44, 52.60, 47.30, 21.23, 21.18, 18.41, 18.33, 18.29, 18.15.
IR (film) ν_{max} : 3404, 1726, 1641, 1601 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}FN_3O_3$ is 704.3289; found 704.3283.

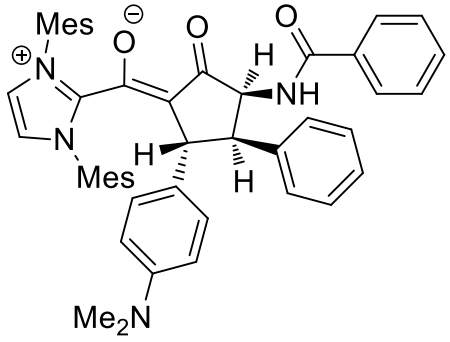
4n'. (Z)-((-3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{46}H_{42}FN_3O_3$, White solid; M.P: 129 - 131 ^oC, Yield: 90 mg (64%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.60 – 7.59 (m, 2H), 7.41 (t, *J* = 7.5 Hz, 1H), 7.33 (t, *J* = 7.5 Hz, 2H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.15 – 7.11 (m, 5H), 7.03 (s, 1H), 6.99 (d, *J* = 8.5 Hz, 3H), 6.92 (s, 1H), 6.54 (t, *J* = 9.0 Hz, 2H), 6.27 (dd, *J* = 8.5, 5.5 Hz, 2H), 6.13 (d, *J* = 7.5 Hz, 1H), 4.62 (dd, *J* = 9.5, 8.0 Hz, 1H), 3.87 (d, *J* = 7.5 Hz, 1H), 2.68 (dd, *J* = 9.5, 8.0 Hz, 1H), 2.51 (s, 3H), 2.49 (s, 3H), 2.35 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H), 2.07 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.84, 167.26, 161.80, 160.13, 159.88, 149.11, 141.38, 140.59, 140.41, 140.04, 137.00, 136.54, 136.51, 136.02, 134.76, 131.36, 131.15, 131.12,

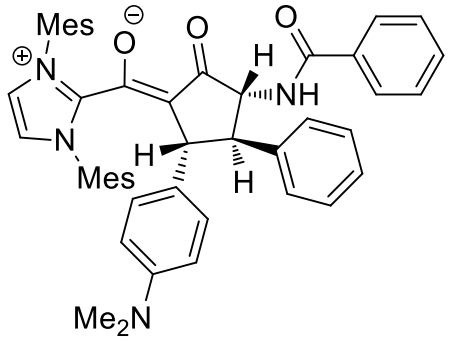
129.86, 129.67, 129.62, 128.24, 128.18, 128.05, 127.94, 127.02, 126.41, 122.04, 121.76, 114.32, 114.15, 109.25, 63.02, 58.27, 49.93, 21.25, 21.13, 18.51, 18.40, 18.38, 18.11.
IR (film) ν_{max} : 3416, 1723, 1644, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}FN_3O_3$ is 704.3289; found 704.3263.

4o. (Z)-(3-benzamido-5-(4-(dimethylamino)phenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{48}H_{48}N_4O_3$, White solid; M.P: 163-165 ^oC, Yield: 35 mg (24%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.34 (t, *J* = 7.5 Hz, 1H), 7.29 (d, *J* = 7.5 Hz, 2H), 7.25 - 7.22 (m, 3H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.13 – 7.07 (m, 3H), 7.01 – 6.95 (m, 3H), 6.95 (s, 1H), 6.84 (d, *J* = 7.5 Hz, 2H), 6.44 (d, *J* = 8.5 Hz, 2H), 6.38 (d, *J* = 8.5 Hz, 2H), 5.91 (d, *J* = 6.5 Hz, 1H), 4.71 (t, *J* = 7.0, 1H), 4.12 (s, 1H), 3.57 (d, *J* = 8.0 Hz, 1H), 2.84 (s, 6H), 2.46 (s, 3H), 2.42 (s, 3H), 2.40 (s, 3H), 2.35 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.67, 167.76, 158.72, 149.80, 148.81, 142.38, 140.49, 140.16, 136.98, 136.69, 136.09, 135.93, 135.24, 131.17, 130.81, 129.88, 129.85, 129.83, 129.21, 128.86, 128.11, 128.07, 127.83, 127.60, 126.84, 126.09, 121.82, 113.41, 109.63, 59.56, 52.91, 47.07, 41.30, 40.89, 21.19, 18.45, 18.36, 18.31, 18.19.
IR (film) ν_{max} : 3396, 1723, 1642, 1609 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{48}N_4O_3$ is 729.3805; found 729.3783.

4o'. (Z)-(3-benzamido-5-(4-(dimethylamino)phenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.

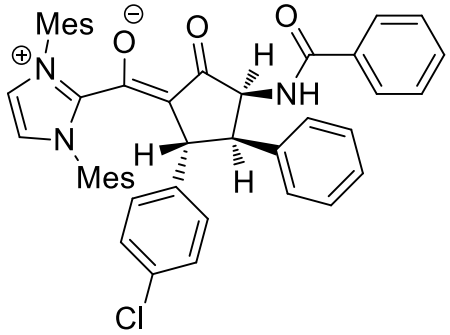


Chemical Formula: $C_{48}H_{48}N_4O_3$, White solid; M.P: 134 - 136 ^oC, Yield: 70 mg (48%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.51 (d, *J* = 7.5 Hz, 2H), 7.42 (t, *J* = 7.0 Hz, 1H), 7.32 (t, *J* = 7.5 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.16 (d, *J* = 1.5 Hz, 1H), 7.13 – 7.11 (m, 3H), 7.03 – 7.01 (m, 5H), 6.93 (s, 1H), 6.34 (d, *J* = 8.5 Hz, 2H), 6.26 (d, *J* = 8.5 Hz, 2H), 6.04 (d, *J* = 8.5 Hz, 1H), 4.58 (t, *J* = 8.0 Hz, 1H), 3.91 (d, *J* = 6.0 Hz, 1H), 2.84 (s, 6H), 2.75 – 2.72 (m, 1H), 2.48 (s, 3H), 2.47 (s, 3H), 2.36 (s, 3H), 2.35 (s, 3H), 2.23 (s, 3H), 2.14 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.58, 166.78, 160.08, 149.62, 148.66, 142.70, 140.49, 140.13, 137.17, 136.54, 136.16, 134.87, 133.58, 131.47, 131.15, 131.00, 129.74, 129.63, 128.14, 127.96, 127.74, 127.33, 127.05, 126.09, 121.89, 121.58, 113.12, 109.53, 63.27, 58.05, 49.39, 41.10, 21.25, 21.13, 18.50, 18.43, 18.40, 18.17.

IR (film) ν_{max} : 3410, 1732, 1649, 1610 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{48}H_{48}N_4O_3$ is 729.3805; found 729.3782.

4p. (Z)-(3-benzamido-5-(4-chlorophenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



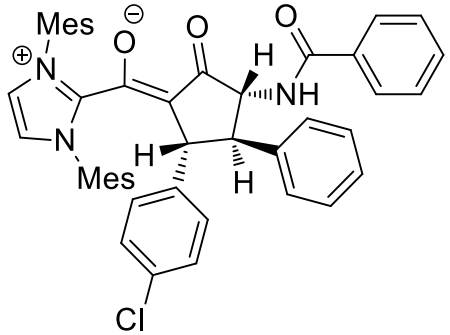
Chemical Formula: $C_{46}H_{42}ClN_3O_3$, White solid; M.P: 259 - 261 ^oC, Yield: 40 mg (28%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.38 - 7.34 (m, 1H), 7.30 – 7.28 (m, 2H), 7.27 – 7.25 (m, 3H), 7.24 - 7.23 (m, 1H), 7.12 – 7.08 (m, 3H), 7.02 – 6.99 (m, 3H), 6.97 (s, 1H), 6.91 – 6.89 (m, 2H), 6.83 (d, *J* = 7.0 Hz, 2H), 6.54 (d, *J* = 7.5 Hz, 2H), 5.90 (d, *J* = 6.0 Hz, 1H), 4.63 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.16 (s, 1H), 3.59 (d, *J* = 8.0 Hz, 1H), 2.47 (s, 3H), 2.42 (s, 3H), 2.39 (s, 3H), 2.37 (s, 3H), 2.29 (s, 3H), 2.15 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.07, 167.86, 158.88, 149.48, 142.95, 141.85, 140.65, 140.56, 136.91, 136.64, 136.04, 135.84, 135.00, 131.05, 130.99, 130.94, 129.93, 129.88, 129.77, 129.24, 128.49, 128.20, 127.95, 127.93, 126.79, 126.36, 121.91, 121.87, 108.77, 59.48, 52.42, 47.47, 21.23, 21.19, 18.42, 18.34, 18.27, 18.17.

IR (film) ν_{max} : 3406, 1717, 1642, 1601 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}ClN_3O_3$ is 720.2993; found 720.2997.

4p'. (Z)-(3-benzamido-5-(4-chlorophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimes ityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{46}H_{42}ClN_3O_3$, White solid; M.P: 145-147 ^oC, Yield: 80 mg (56%)

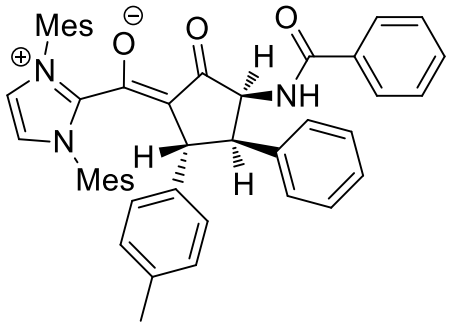
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.60 – 7.58 (m, 2H), 7.43 – 7.39 (m, 1H), 7.33 (t, *J* = 7.5 Hz, 2H), 7.20 (d, *J* = 1.5 Hz, 1H), 7.14 – 7.10 (m, 5H), 7.04 (s, 1H), 6.99 - 6.96 (m, 3H), 6.91 (s, 1H), 6.81 (d, *J* = 8.5 Hz, 2H), 6.25 (d, *J* = 8.5 Hz, 2H), 6.09 (d, *J* = 7.5 Hz, 1H), 4.62 (dd, *J* =

10.0, 8.0 Hz, 1H), 3.86 (d, *J* = 8.0 Hz, 1H), 2.65 (dd, *J* = 10.0, 8.0 Hz, 1H), 2.51 (s, 3H), 2.49 (s, 3H), 2.34 (d, *J* = 2.0 Hz, 6H), 2.20 (s, 3H), 2.08 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.72, 167.27, 160.04, 149.08, 143.00, 141.27, 140.59, 140.46, 137.01, 136.51, 136.49, 136.01, 134.76, 131.37, 131.17, 131.14, 130.61, 129.85, 129.67, 129.63, 128.32, 128.26, 128.07, 127.94, 127.69, 127.01, 126.45, 122.07, 121.80, 108.94, 63.02, 58.24, 50.11, 21.27, 21.13, 18.53, 18.40, 18.12.

IR (film) ν_{max} : 3361, 1717, 1646, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{46}H_{42}ClN_3O_3$ is 720.2993; found 720.2993.

4q. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



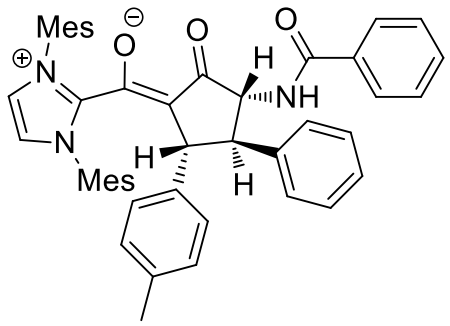
Chemical Formula: $C_{47}H_{45}N_3O_3$, White solid; M.P: 255-257 ^oC, Yield: 42 mg (30%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.27 (t, *J* = 7.0 Hz, 1H), 7.21 – 7.15 (m, 5H), 7.12 (d, *J* = 1.5 Hz, 1H), 7.03 - 7.00 (m, 3H), 6.94 - 6.91 (m, 3H), 6.87 (s, 1H), 6.77 (d, *J* = 8.0 Hz, 2H), 6.66 (d, *J* = 7.5 Hz, 2H), 6.40 (d, *J* = 8.0 Hz, 2H), 5.81 (d, *J* = 6.1 Hz, 1H), 4.66 – 4.53 (m, 1H), 4.08 (s, 1H), 3.52 (d, *J* = 7.9 Hz, 1H), 2.38 (s, 3H), 2.34 (s, 3H), 2.32 (s, 3H), 2.28 (s, 3H), 2.21 (s, 3H), 2.15 (s, 3H), 2.06 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.38, 166.73, 157.73, 148.61, 141.20, 140.26, 139.47, 139.28, 135.90, 135.54, 134.95, 134.82, 134.11, 133.49, 130.11, 130.03, 129.84, 128.84, 128.80, 128.72, 128.15, 127.55, 127.10, 126.97, 126.82, 125.89, 125.75, 125.14, 120.80, 108.15, 58.45, 51.73, 46.59, 20.18, 20.15, 19.97, 17.40, 17.32, 17.26, 17.14.

IR (film) ν_{max} : 3417, 1717, 1647, 1605 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_3$ is 700.3539; found 700.3546.

4q'. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



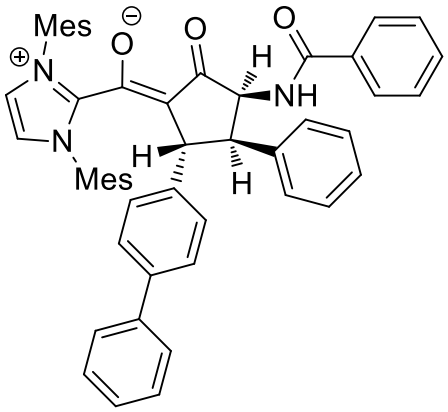
Chemical Formula: $C_{47}H_{45}N_3O_3$, White solid; M.P: 148-150 ^oC, Yield: 84 mg (60%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.54 (d, *J* = 7.5 Hz, 2H), 7.42 (t, *J* = 7.5 Hz, 1H), 7.33 (t, *J* = 8.0 Hz, 2H), 7.21 (d, *J* = 2.0 Hz, 1H), 7.15 (d, *J* = 2.0 Hz, 1H), 7.13 - 7.10 (m, 3H), 7.07 (s, 1H), 7.04 (s, 1H), 7.02 – 7.00 (m, 3H), 6.92 (s, 1H), 6.69 (d, *J* = 8.0 Hz, 2H), 6.26 (d, *J* = 8.0 Hz, 2H), 6.02 (d, *J* = 8.5 Hz, 1H), 4.61 (t, *J* = 8.5 Hz, 1H), 3.92 (d, *J* = 6.5 Hz, 1H), 2.70 – 2.67 (m, 1H), 2.50 (s, 3H), 2.48 (s, 3H), 2.36 (s, 3H), 2.35 (s, 3H), 2.22 (s, 3H), 2.21 (s, 3H), 2.11 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.24, 167.01, 160.08, 149.45, 142.19, 141.49, 140.52, 140.31, 137.05, 136.51, 136.41, 136.08, 134.86, 134.37, 131.40, 131.16, 131.05, 129.73, 129.68, 129.62, 128.48, 128.18, 127.99, 127.82, 127.02, 126.71, 126.21, 121.91, 121.66, 109.28, 63.21, 58.30, 50.04, 21.25, 21.13, 21.10, 18.50, 18.48, 18.39, 18.13.

IR (film) ν_{max} : 3413, 1717, 1646, 1604 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_3$ is 700.3539; found 700.3535

4r. (Z)-(2-([1,1'-biphenyl]-4-yl)-4-benzamido-5-oxo-3-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



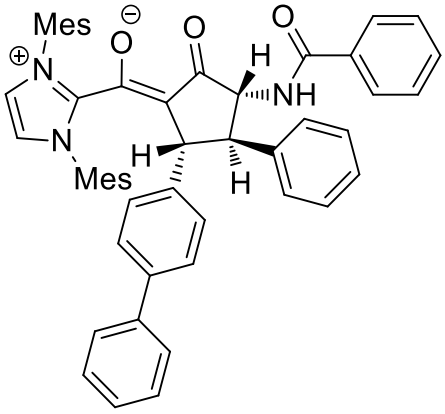
Chemical Formula: $C_{52}H_{47}N_3O_3$, Yellow solid; M.P: 288 - 290 ^oC, Yield: 40 mg (26%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.52 (dd, *J* = 8.0, 1.0 Hz, 2H), 7.42 (t, *J* = 8.0 Hz, 2H), 7.38 – 7.35 (m, 1H), 7.33 – 7.29 (m, 3H), 7.28 – 7.26 (m, 3H), 7.24 - 7.23 (m, 1H), 7.17 (d, *J* = 8.0 Hz, 2H), 7.14 – 7.10 (m, 3H), 7.04 - 7.01 (m, 3H), 6.97 (s, 1H), 6.88 (d, *J* = 7.0 Hz, 2H), 6.66 (d, *J* = 8.0 Hz, 2H), 5.91 (d, *J* = 6.5 Hz, 1H), 4.72 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.25 (s, 1H), 3.67 (d, *J* = 7.9 Hz, 1H), 2.46 (s, 3H), 2.44 (s, 3H), 2.43 (s, 3H), 2.39 (s, 3H), 2.31 (s, 3H), 2.17 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.33, 167.83, 158.90, 149.64, 143.58, 142.14, 141.84, 140.58, 140.41, 138.34, 136.95, 136.66, 136.08, 135.88, 135.12, 131.11, 130.91, 129.96, 129.87, 129.82, 129.23, 128.63, 128.16, 128.01, 127.93, 127.49, 126.97, 126.82, 126.80, 126.63, 126.27, 121.87, 109.04, 59.57, 52.67, 47.77, 21.24, 21.23, 18.45, 18.35, 18.32, 18.18.

IR (film) ν_{max} : 3410, 1713, 1643, 1605 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{52}H_{47}N_3O_3$ is 762.3696; found 762.3679.

4r'. (Z)-(2-([1,1'-biphenyl]-4-yl)-4-benzamido-5-oxo-3-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



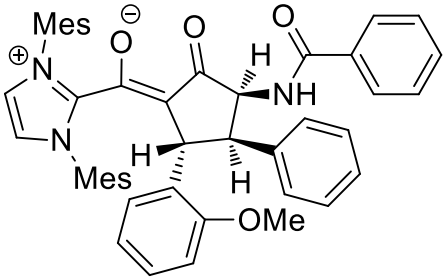
Chemical Formula: $C_{52}H_{47}N_3O_3$, Yellow solid; M.P: 135-137 ^oC, Yield: 100 mg (66%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.57 – 7.55 (m, 2H), 7.49 (dd, *J* = 8.0, 1.0 Hz, 2H), 7.41 – 7.38 (m, 3H), 7.33 – 7.26 (m, 3H), 7.22 (d, *J* = 1.5 Hz, 1H), 7.16 – 7.10 (m, 7H), 7.05 - 7.02 (m, 4H), 6.93 (s, 1H), 6.43 (d, *J* = 8.0 Hz, 2H), 6.03 (d, *J* = 7.5 Hz, 1H), 4.63 (s, 1H), 3.99 (d, *J* = 7.0 Hz, 1H), 2.77 (t, J = 7.5, 1H), 2.53 (s, 3H), 2.49 (s, 3H), 2.36 (s, 6H), 2.23 (s, 3H), 2.11 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.06, 167.07, 160.05, 149.41, 143.97, 142.03, 141.75, 140.55, 140.35, 137.97, 137.12, 136.50, 136.08, 134.86, 131.44, 131.16, 131.07, 129.77, 129.73, 129.62, 128.59, 128.21, 128.02, 127.87, 127.25, 126.99, 126.88, 126.59, 126.55, 126.29, 121.95, 121.69, 109.21, 63.27, 58.15, 50.18, 21.30, 21.13, 18.52, 18.45, 18.40, 18.14.

IR (film) ν_{max} : 3420, 1721, 1649, 1604 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{52}H_{47}N_3O_3$ is 762.3696; found 762.3698.

4s. (Z)-(3-benzamido-5-(2-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



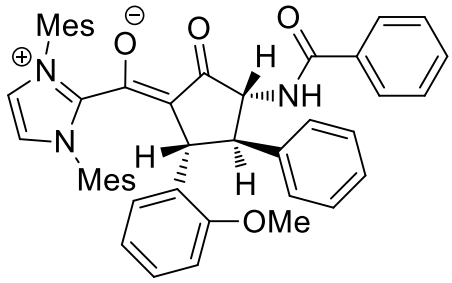
Chemical Formula: $C_{47}H_{45}N_3O_4$, Yellow solid; M.P: 243 - 245 ^oC, Yield: 30 mg (21%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.36 – 7.33 (m, 1H), 7.29 - 7.27 (m, 2H), 7.26 – 7.25 (m, 2H), 7.24 (s, 1H), 7.23 (d, *J* = 2.0 Hz, 1H), 7.14 (s, 1H), 7.11 – 7.08 (m, 2H), 7.02 – 6.99 (m, 5H), 6.87 (d, *J* = 7.5 Hz, 2H), 6.70 (d, *J* = 8.0 Hz, 1H), 6.28 (t, *J* = 7.5 Hz, 1H), 5.95 (d, *J* = 6.5 Hz, 1H), 5.85 (t, J = 6.0 Hz, 1H), 4.59 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.32 (s, 1H), 3.62 (s, 3H), 3.54 (d, *J* = 8.0 Hz, 1H), 2.47 (s, 3H), 2.43 – 2.42 (m, 9H), 2.29 (s, 3H), 2.19 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 193.35, 167.77, 158.71, 157.70, 149.88, 142.88, 140.52, 140.49, 137.03, 136.76, 136.18, 135.96, 135.22, 131.64, 131.13, 131.10, 130.78, 129.91, 129.81, 129.75, 129.21, 128.09, 127.98, 127.72, 126.85, 126.62, 125.92, 125.88, 121.82, 121.77, 120.41, 119.43, 109.78, 108.15, 59.61, 54.69, 50.84, 42.92, 21.20, 18.43, 18.34, 18.28, 18.23.

IR (film) ν_{max} : 3409, 1718, 1643, 1599 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_4$ is 716.3488; found 716.3481.

4s'. (Z)-(3-benzamido-5-(2-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



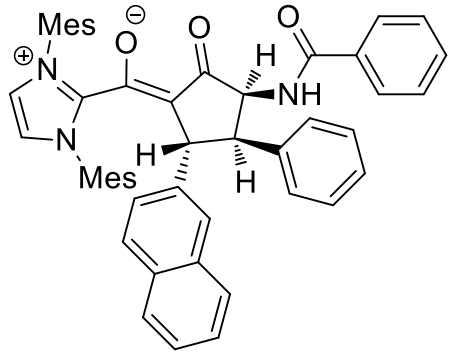
Chemical Formula: $C_{47}H_{45}N_3O_4$, Yellow solid; M.P: 180 - 182 ^oC, Yield: 69 mg (48%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.42 (t, *J* = 7.5 Hz, 1H), 7.38 (d, *J* = 7.5 Hz, 2H), 7.31 (t, *J* = 7.5 Hz, 2H), 7.22 (d, *J* = 2.0 Hz, 1H), 7.19 (d, *J* = 1.5 Hz, 1H), 7.10 – 7.09 (m, 3H), 7.04 - 7.00 (m, 5H), 6.92 (s, 1H), 6.85 (s, 1H), 6.67 (d, *J* = 8.0 Hz, 1H), 6.41 (t, J = 7.5 Hz, 1H), 5.94 (dd, *J* = 13.0, 7.5 Hz, 2H), 4.45 (dd, *J* = 8.5, 3.5 Hz, 1H), 4.23 (d, *J* = 2.5 Hz, 1H), 3.50 (s, 3H), 2.82 (t, *J* = 3.0 Hz, 1H), 2.42 (s, 6H), 2.41 (s, 3H), 2.37 (s, 3H), 2.21 (s, 3H), 2.18 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 193.76, 166.16, 160.28, 157.51, 149.71, 144.62, 140.47, 140.31, 137.14, 136.64, 136.54, 136.23, 134.74, 133.44, 131.29, 131.05, 131.00, 129.64, 129.57, 129.50, 128.17, 127.80, 127.15, 126.89, 126.76, 125.78, 125.53, 121.88, 121.63, 119.73, 110.48, 108.36, 63.73, 55.10, 54.67, 45.22, 21.24, 21.17, 18.46, 18.28, 18.20.

IR (film) ν_{max} : 3419, 1711, 1644, 1600 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{45}N_3O_4$ is 716.3488; found 716.3472.

4t. (Z)-(3-benzamido-5-(naphthalen-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{50}H_{45}N_3O_3$, Yellow solid; M.P: 257 - 259 ^oC, Yield: 38 mg (26%)

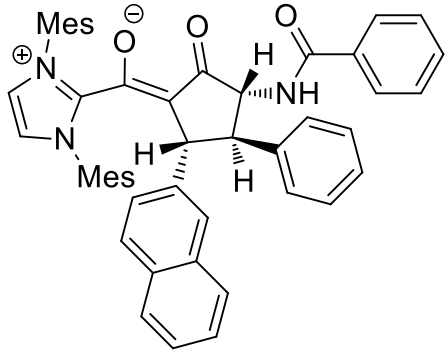
^1H NMR (500 MHz, $CDCl_3$) δ 7.71 – 7.69 (m, 1H), 7.50 (d, *J* = 8. Hz, 1H), 7.39 – 7.33 (m, 4H), 7.29 - 7.45 (m, 4H), 7.22 - 7.21 (m, 3H), 7.14 – 7.11 (m, 2H), 7.06 - 7.01 (m, 4H), 6.97 (dd, *J* = 8.5, 1.5 Hz, 1H), 6.89 – 6.85 (m, 3H), 5.90 (d, *J* = 6.0 Hz, 1H), 4.79 (dd, *J* = 8.0, 6.5 Hz, 1H), 4.38 (s, 1H), 3.71 (d, *J* = 8.0 Hz, 1H), 2.49 (s, 3H), 2.48 (s, 3H), 2.45 (s, 3H), 2.39 (s, 3H), 2.30 (s, 3H), 2.12 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.46, 167.81, 159.06, 149.56, 142.20, 142.16, 140.57, 140.54, 136.99, 136.61, 136.02, 135.86, 135.15, 133.57, 132.19, 131.24, 131.20, 130.88,

130.01, 129.94, 129.36, 128.15, 128.01, 127.92, 127.59, 127.30, 126.82, 126.78, 126.24, 124.96, 124.56, 124.45, 121.96, 121.90, 109.01, 59.53, 52.46, 48.52, 21.23, 18.40, 18.37, 18.26.

IR (film) ν_{max} : 3423, 1723, 1644, 1603; HRMS (ESI) $(M+H)^+$: calculated for $C_{50}H_{45}N_3O_3$ is 736.3539; found 736.3552.

4t'. (Z)-(3-benzamido-5-(naphthalen-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



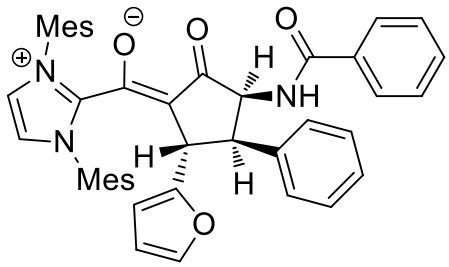
Chemical Formula: $C_{50}H_{45}N_3O_3$, Yellow solid; M.P: 153 - 155 ^oC, Yield: 95 mg (65%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.68 – 7.66 (m, 1H), 7.52 (d, *J* = 7.0 Hz, 2H), 7.41 – 7.37 (m, 3H), 7.32 – 7.25 (m, 4H), 7.20 – 7.18 (m, 2H), 7.15 (d, J = 6.5 Hz, 1H), 7.11 – 7.10 (m, 3H), 7.03 (d, *J* = 7.0 Hz, 2H), 6.98 -6.97 (m, 3H), 6.93 (s, 1H), 6.57 (dd, *J* = 8.5, 1.5 Hz, 1H), 6.10 (d, *J* = 8.0 Hz, 1H), 4.68 (t, *J* = 8.0 Hz, 1H), 4.10 (d, *J* = 7.0 Hz, 1H), 2.86 – 2.76 (m, 1H), 2.56 (s, 3H), 2.55 (s, 3H), 2.37 (s, 3H), 2.36 (s, 3H), 2.19 (s, 3H), 2.06 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.24, 167.16, 160.21, 149.28, 142.31, 141.88, 140.50, 140.42, 137.00, 136.47, 136.39, 136.01, 134.73, 133.39, 132.13, 131.50, 131.17, 131.07, 129.87, 129.85, 129.72, 129.64, 128.19, 128.04, 127.79, 127.38, 127.32, 126.97, 126.29, 125.83, 125.19, 124.93, 124.50, 121.97, 121.77, 109.09, 63.15, 57.97, 50.85, 21.31, 21.13, 18.54, 18.41, 18.38, 18.15.

IR (film) ν_{max} : 3417, 1711, 1643, 1601 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{50}H_{45}N_3O_3$ is 736.3539; found 736.3566.

4u. (Z)-(3-benzamido-5-(furan-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{44}H_{41}N_3O_4$, Yellow solid; M.P: 250 - 252 ^oC, Yield: 38 mg (28%)

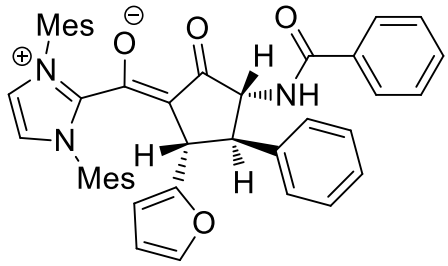
^1H NMR (500 MHz, $CDCl_3$) δ 7.36 (t, *J* = 7.0 Hz, 1H), 7.31 (d, *J* = 7.5 Hz, 2H), 7.27 - 7.24 (m, 3H), 7.22 (s, 1H), 7.14 (s, 1H), 7.10 - 7.06 (m, 3H), 7.03 (s, 1H), 6.99 – 6.96 (m, 3H), 6.81 (d, *J* = 7.5 Hz, 2H), 5.93 (s, 1H), 5.88 (d, *J* = 6.0 Hz, 1H), 4.78 – 4.73 (m, 2H), 4.18 (s,

1H), 3.85 (d, *J* = 8.0 Hz, 1H), 2.42 (s, 3H), 2.39 (s, 3H), 2.36 (s, 3H), 2.34 (s, 3H), 2.31 (s, 3H), 2.20 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.94, 167.80, 158.75, 157.06, 149.49, 141.23, 140.91, 140.54, 140.51, 136.89, 136.51, 136.00, 135.84, 135.15, 131.09, 130.99, 130.90, 129.86, 129.80, 129.62, 129.30, 128.17, 128.03, 127.88, 126.80, 126.24, 121.88, 121.84, 109.46, 107.94, 104.19, 59.91, 48.59, 41.83, 21.20, 20.99, 18.36, 18.35, 18.20, 18.16.

IR (film) ν_{max} : 3405, 1642, 1720, 1601 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{44}H_{41}N_3O_4$ is 676.3175; found 676.3159.

4u'. (Z)-(3-benzamido-5-(furan-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



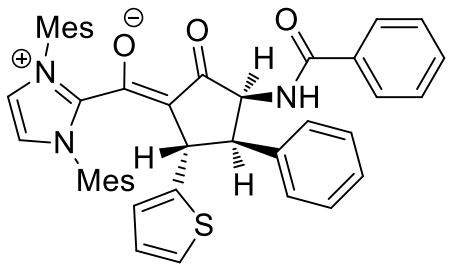
Chemical Formula: $C_{44}H_{41}N_3O_4$, Yellow solid; M.P: 139 - 141 ^oC, Yield: 76 mg (56%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.57 (d, *J* = 7.5 Hz, 2H), 7.48 (t, *J* = 7.5 Hz, 1H), 7.39 (t, *J* = 7.0 Hz, 2H), 7.19 (d, *J* = 2.0 Hz, 1H), 7.17 (d, *J* = 2.0 Hz, 1H), 7.12 – 7.10 (m, 3H), 7.08 (s, 1H), 7.01 – 6.99 (m, 3H), 6.96 (s, 1H), 6.93 (s, 1H), 6.76 (s, 1H), 6.29 (d, *J* = 8.5 Hz, 1H), 6.05 – 6.04 (m, 1H), 5.20 (d, *J* = 3.0 Hz, 1H), 4.48 (dd, *J* = 9.0, 3.5 Hz, 1H), 4.04 (d, *J* = 3.0 Hz, 1H), 3.08 (t, *J* = 3.5 Hz, 1H), 2.37 (s, 3H), 2.35 (s, 3H), 2.34 (s, 3H), 2.33 (s, 3H), 2.24 (s, 3H), 2.12 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.26, 166.39, 160.52, 158.37, 149.23, 143.43, 140.65, 140.52, 140.10, 136.66, 136.36, 136.16, 136.07, 134.98, 131.19, 131.09, 131.05, 129.54, 129.40, 128.28, 128.18, 127.06, 126.93, 126.18, 121.84, 121.75, 109.69, 108.52, 104.42, 63.27, 52.52, 44.41, 21.14, 21.03, 18.36, 18.30, 18.06.

IR (film) ν_{max} : 3416, 1717, 1646, 1602 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{44}H_{41}N_3O_4$ is 676.3175; found 676.3172.

4v. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{44}H_{41}N_3O_3S$, Yellow solid; M.P: 208 - 210 ^oC, Yield: 30 mg (22%)

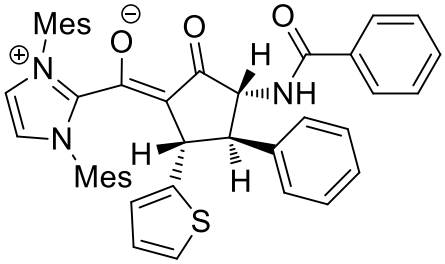
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30 – 7.27 (m, 1H), 7.25 - 7.23 (m, 2H), 7.20 – 7.17 (m, 3H), 7.14 (d, *J* = 2.0 Hz, 1H), 7.04 – 6.99 (m, 3H), 6.95 (s, 1H), 6.91 (t, *J* = 7.5 Hz, 2H), 6.85 (s,

1H), 6.80 (dd, *J* = 5.0, 1.0 Hz, 1H), 6.73 (d, *J* = 7.5 Hz, 2H), 6.51 (dd, *J* = 5.0, 3.5 Hz, 1H), 5.92 (dt, *J* = 3.0, 1.0 Hz, 1H), 5.82 (d, *J* = 6.0 Hz, 1H), 4.76 (dd, *J* = 7.5, 6.5 Hz, 1H), 4.30 (s, 1H), 3.69 (d, *J* = 7.5 Hz, 1H), 2.35 (s, 3H), 2.32 (s, 3H), 2.29 (s, 3H), 2.28 (s, 3H), 2.23 (s, 3H), 2.11 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.72, 167.81, 158.92, 149.51, 149.37, 141.33, 140.56, 140.46, 136.95, 136.55, 136.06, 135.86, 135.09, 131.08, 131.05, 130.95, 129.92, 129.88, 129.75, 129.31, 128.19, 128.00, 127.91, 126.81, 126.32, 126.03, 122.96, 122.51, 121.93, 121.90, 110.55, 59.71, 52.91, 43.30, 21.23, 21.08, 18.43, 18.40, 18.22.

IR (film) ν_{max} : 3408, 1732, 1641, 1604 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{44}H_{41}N_3O_3S$ is 692.2947; found 692.2937.

4v'. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



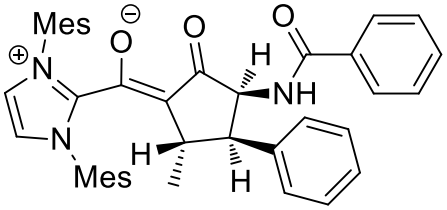
Chemical Formula: $C_{44}H_{41}N_3O_3S$, Yellow solid; M.P: 152 - 154 ^oC, Yield: 103 mg (74%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.55 – 7.50 (m, 2H), 7.43 (t, *J* = 7.5 Hz, 1H), 7.36 – 7.33 (m, 2H), 7.21 (t, *J* = 2.0 Hz, 1H), 7.17 (d, *J* = 2.0 Hz, 1H), 7.13 - 7.12 (m, 3H), 7.01 – 6.95 (m, 6H), 6.87 (dd, *J* = 5.0, 1.0 Hz, 1H), 6.61 (dd, *J* = 5.0, 3.5 Hz, 1H), 6.12 (d, *J* = 8.5 Hz, 1H), 6.02 (d, *J* = 3.5 Hz, 1H), 4.51 (dd, *J* = 8.0, 5.5 Hz, 1H), 4.22 (d, *J* = 4.0 Hz, 1H), 2.97 (t, J = 5.5 Hz, 1H), 2.43 (s, 3H), 2.39 (s, 3H), 2.37 (s, 3H), 2.34 (s, 3H), 2.25 (s, 3H), 2.17 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.99, 166.80, 160.57, 151.01, 149.19, 142.76, 140.53, 140.38, 136.97, 136.45, 136.41, 136.08, 134.77, 131.34, 131.11, 131.05, 129.75, 129.69, 129.65, 129.61, 128.24, 128.15, 127.40, 126.96, 126.30, 126.17, 122.84, 122.43, 121.96, 121.79, 110.60, 63.52, 57.80, 45.93, 21.16, 21.12, 18.44, 18.38, 18.33, 18.16.

IR (film) ν_{max} : 3416, 1717, 1646, 1604 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{44}H_{41}N_3O_3S$ is 692.2947; found 692.2944.

4w. (Z)-(3-benzamido-5-methyl-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{41}H_{41}N_3O_3$, White solid; M.P: 188 - 190 ^oC, Yield: 30 mg (24%)

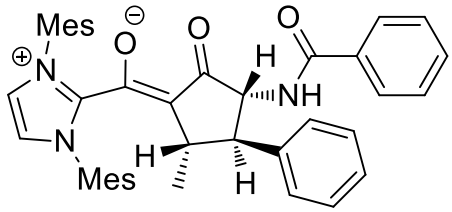
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.38 – 7.35 (m, 1H), 7.31 – 7.30 (m, 2H), 7.27 - 7.24 (m, 2H), 7.20 (d, *J* = 2.0 Hz, 1H), 7.18 (d, *J* = 2.0 Hz, 1H), 7.05 -7.03 (m, 3H), 6.99 - 6.95 (m, 4H),

6.79 – 6.77 (m, 2H), 5.86 (d, *J* = 6.5 Hz, 1H), 4.74 (dd, *J* = 7.5, 6.5 Hz, 1H), 3.34 (d, *J* = 8.0 Hz, 1H), 3.06 (q, *J* = 7.0 Hz, 1H), 2.41 (s, 3H), 2.34 (s, 3H), 2.33 (s, 6H), 2.29 (s, 3H), 2.26 (s, 3H), 0.95 (d, *J* = 7.0 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.80, 168.01, 158.11, 149.73, 142.41, 140.47, 140.33, 136.75, 136.00, 135.76, 135.50, 135.13, 131.26, 130.98, 130.89, 129.71, 129.70, 129.27, 129.23, 128.14, 127.99, 127.79, 126.85, 125.95, 121.74, 121.63, 113.35, 59.83, 50.58, 37.67, 21.21, 21.04, 19.17, 18.44, 18.39, 18.19, 18.12.

IR (film) ν_{max} : 3405, 1722, 1639, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{41}H_{41}N_3O_3$ is 624.3226; found 624.3208.

4w'. (Z)-(3-benzamido-5-methyl-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



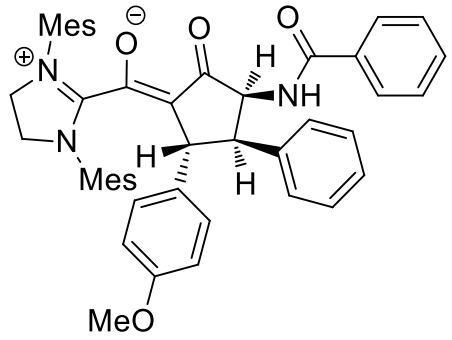
Chemical Formula: $C_{41}H_{41}N_3O_3$, White solid; M.P: 116 - 118 ^oC, Yield: 60 mg (48%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.67 – 7.65 (m, 2H), 7.44 (t, *J* = 7.5 Hz, 1H), 7.38 (t, *J* = 7.0 Hz, 2H), 7.20 - 7.18 (m, 3H), 7.16 – 7.12 (m, 4H), 6.99 (d, *J* = 10.0 Hz, 4H), 5.84 (d, *J* = 7.5 Hz, 1H), 4.52 (dd, *J* = 10.0, 7.5 Hz, 1H), 2.80 - 2.74 (m, 1H), 2.43 (s, 3H), 2.40 (s, 3H), 2.35 (s, 3H), 2.29 (s, 3H), 2.28 (s, 3H), 2.24 (s, 3H), 2.03 (dd, *J* = 10.0, 8.5 Hz, 1H), 0.94 (d, *J* = 6.5 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.04, 167.43, 160.25, 149.42, 142.04, 140.48, 140.22, 136.43, 136.24, 135.78, 135.69, 135.07, 131.53, 131.35, 131.09, 129.64, 129.36, 129.31, 129.25, 128.26, 128.07, 127.98, 126.99, 126.30, 121.68, 121.58, 112.09, 62.48, 58.06, 39.47, 21.16, 21.13, 18.79, 18.50, 18.41, 17.95, 17.68.

IR (film) ν_{max} : 3413, 1723, 1643, 1605 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{41}H_{41}N_3O_3$ is 624.3226; found 624.3229.

4x. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-4,5-dihydro-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{47}H_{47}N_3O_4$, Yellow solid; M.P: 190 - 192 ^oC, Yield: 25 mg (17%)

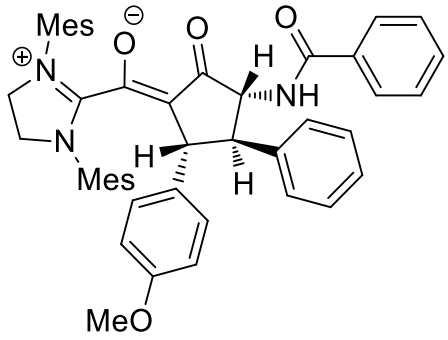
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.39 – 7.36 (m, 1H), 7.35 – 7.33 (m, 2H), 7.28 (d, *J* = 7.5 Hz, 2H), 7.10 (t, *J* = 7.5 Hz, 1H), 7.06 (s, 1H), 7.12 - 6.98 (m, 4H), 6.92 (s, 1H), 6.81 (d, *J* = 7.0

Hz, 2H), 6.42 (d, *J* = 8.5 Hz, 2H), 6.38 (d, *J* = 8.5 Hz, 2H), 5.91 (d, *J* = 6.5 Hz, 1H), 4.74 – 4.71 (m, 1H), 4.55 (d, *J* = 12.0 Hz, 2H), 4.21 (d, *J* = 4.0 Hz, 2H), 4.03 (s, 1H), 3.71 (s, 3H), 3.57 (d, *J* = 8.0 Hz, 1H), 2.60 (s, 3H), 2.54 (s, 3H), 2.50 (s, 6H), 2.42 (s, 3H), 2.38 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.31, 168.27, 167.78, 160.10, 157.36, 142.13, 139.78, 139.68, 137.85, 137.43, 137.38, 137.26, 136.23, 135.13, 131.02, 130.93, 130.88, 130.26, 130.13, 129.98, 129.52, 128.19, 128.03, 127.87, 127.83, 126.80, 126.24, 113.35, 106.97, 59.41, 55.18, 53.08, 50.47, 50.33, 46.65, 21.14, 21.12, 18.96, 18.93, 18.32.

IR (film) ν_{max} : 3401, 1717, 1642, 1606 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{47}N_3O_4$ is 718.3645; found 718.3670.

4x'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-4,5-dihydro-1H-imidazol-3-ium-2-yl)methanolate.



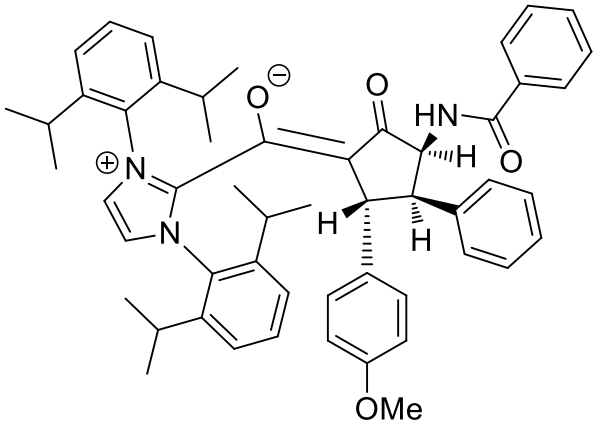
Chemical Formula: $C_{47}H_{47}N_3O_4$, Yellow solid; M.P: 162 - 164 ^oC, Yield: 50 mg (35%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.59 (d, *J* = 7.5 Hz, 2H), 7.43 (t, *J* = 7.5 Hz, 1H), 7.35 (t, *J* = 7.5 Hz, 2H), 7.14 – 7.11 (m, 3H), 7.01 – 6.97 (m, 4H), 6.95 (s, 1H), 6.88 (s, 1H), 6.36 (d, *J* = 8.5 Hz, 2H), 6.10 (d, *J* = 8.5 Hz, 2H), 6.07 (d, *J* = 8.0 Hz, 1H), 4.71 (t, *J* = 8.5 Hz, 1H), 4.54 (d, *J* = 6.0 Hz, 2H), 4.14 (d, *J* = 3.0 Hz, 2H), 3.79 (d, *J* = 7.0 Hz, 1H), 3.68 (s, 3H), 2.65 (dd, *J* = 8.5, 7.0 Hz, 1H), 2.62 (s, 3H), 2.53 (s, 3H), 2.49 (s, 3H), 2.45 (s, 3H), 2.44 (s, 3H), 2.31 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.08, 167.81, 167.02, 161.32, 157.10, 141.88, 139.76, 139.59, 138.10, 137.66, 136.90, 136.36, 134.79, 131.34, 131.13, 130.95, 130.06, 129.97, 129.88, 128.22, 127.99, 127.85, 127.59, 127.05, 126.27, 113.16, 106.86, 62.92, 58.72, 55.01, 50.62, 50.10, 49.20, 21.18, 21.03, 19.00, 18.96, 18.48, 18.24.

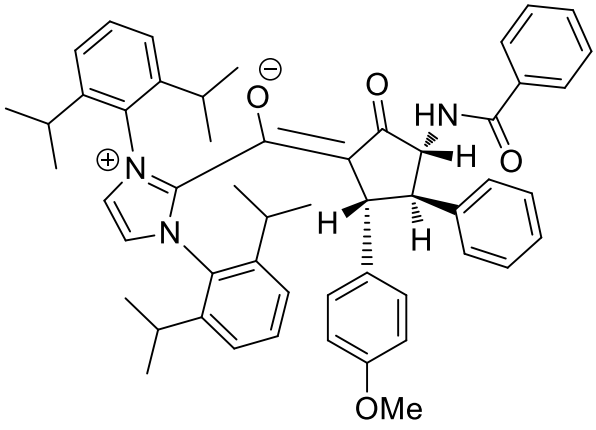
IR (film) ν_{max} : 3416, 1718, 1644, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{47}H_{47}N_3O_4$ is 718.3645; found 718.3665.

4y. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-(2,6-diisopropylphenyl)-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{53}H_{57}N_3O_4$, White solid; M.P: 145-147 ^oC, Yield: 20 mg (13%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.63 (dd, *J* = 14.0, 8.0 Hz, 2H), 7.44 (dd, *J* = 8.0, 1.0 Hz, 1H), 7.39 – 7.24 (m, 10H), 7.04 (t, *J* = 7.0 Hz, 1H), 6.88 (t, *J* = 7.5 Hz, 2H), 6.76 (d, *J* = 7.5 Hz, 2H), 6.42 (s, 4H), 5.94 (d, *J* = 6.0 Hz, 1H), 4.59 (dd, *J* = 8.0, 6.0 Hz, 1H), 4.20 (s, 1H), 3.76 (d, *J* = 8.0 Hz, 1H), 3.72 (s, 3H), 3.64 – 3.59 (m, 1H), 3.43 - 3.38 (m, 1H), 3.07 - 3.01 (m, 1H), 2.85 - 2.79 (m, 1H), 1.42 (d, *J* = 6.5 Hz, 3H), 1.24 (d, *J* = 6.5 Hz, 3H), 1.19 (t, *J* = 6.5 Hz, 6H), 1.15 (d, *J* = 6.5 Hz, 3H), 1.05 (dd, *J* = 7.0, 3.5 Hz, 6H), 0.90 (d, *J* = 6.5 Hz, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.73, 167.63, 158.54, 157.26, 150.63, 147.64, 147.43, 147.34, 146.81, 141.59, 135.89, 135.19, 131.33, 131.32, 130.91, 130.72, 130.66, 128.38, 128.23, 128.12, 127.99, 126.73, 125.96, 124.79, 124.71, 124.53, 124.40, 122.68, 122.43, 113.30, 109.88, 59.71, 55.30, 52.65, 45.80, 29.35, 29.23, 27.85, 27.36, 26.84, 26.76, 26.12, 26.10, 23.08, 22.74, 22.28, 22.16.
IR (film) ν_{max} : 3409, 1717, 1642, 1604 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{53}H_{57}N_3O_4$ is 800.4427; found 800.4419.

4y'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-(2,6-diisopropylphenyl)-1H-imidazol-3-ium-2-yl)methanolate.



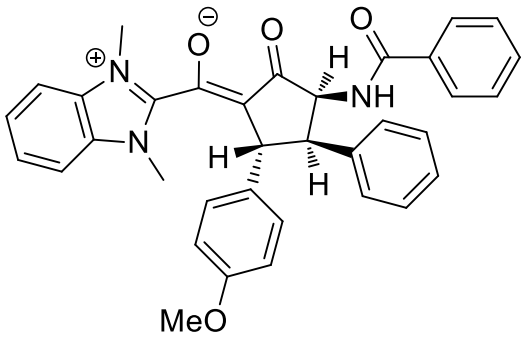
Chemical Formula: $C_{53}H_{57}N_3O_4$, White solid; M.P: 178 - 180 ^oC, Yield: 119 mg (74%)
^1H NMR (500 MHz, $CDCl_3$) δ 7.67 (t, *J* = 8.0 Hz, 1H), 7.57 – 7.56 (m, 2H), 7.49 (t, *J* = 7.5 Hz, 2H), 7.40 (t, *J* = 7.5 Hz, 1H), 7.36 (dd, *J* = 8.0, 1.5 Hz, 1H), 7.33 – 7.30 (m, 3H), 7.23 (dd, *J* = 7.5, 1.0 Hz, 1H), 7.20 (d, *J* = 1.5 Hz, 1H), 7.16 (d, *J* = 2.0 Hz, 1H), 7.10 (d, *J* = 7.5 Hz, 3H), 6.98 - 6.96 (m, 2H), 6.34 (d, *J* = 8.5 Hz, 2H), 6.07 (d, *J* = 8.5 Hz, 2H), 6.04 (d, *J* =

8.0 Hz, 1H), 4.92 (dd, *J* = 10.5, 8.0 Hz, 1H), 3.85 - 3.81 (m, 2H), 3.68 (s, 3H), 3.47 - 3.41 (m, 1H), 2.83 - 2.78 (m, 1H), 2.51 – 2.47 (m, 2H), 1.40 (d, *J* = 6.5 Hz, 3H), 1.33 (d, *J* = 7.0 Hz, 3H), 1.28 (d, *J* = 7.0 Hz, 3H), 1.20 (dd, *J* = 12.5, 7.0 Hz, 6H), 1.06 (d, *J* = 7.0 Hz, 3H), 1.00 (d, *J* = 6.5 Hz, 3H), 0.95 (d, *J* = 6.5 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 191.31, 167.09, 159.92, 157.04, 150.41, 147.32, 147.30, 146.97, 141.05, 136.44, 134.81, 131.32, 131.18, 131.02, 130.55, 128.20, 128.07, 127.92, 127.84, 126.96, 126.20, 124.94, 124.81, 124.27, 122.94, 122.18, 113.03, 110.08, 61.87, 59.51, 55.13, 49.34, 29.31, 28.91, 27.71, 27.47, 26.35, 26.08, 25.97, 25.91, 24.32, 23.78, 22.67, 21.80.

IR (film) ν_{max} : 3403, 1717, 1641, 1603 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{53}H_{57}N_3O_4$ is 800.4427; found 800.4447.

4z. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimethyl-1H-benzo[d]imidazol-3-ium-2-yl)methanolate.



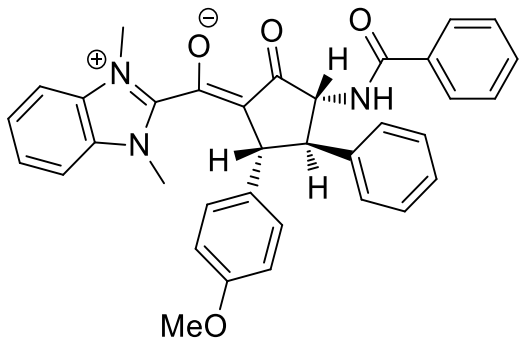
Chemical Formula: $C_{35}H_{31}N_3O_4$, White solid; M.P: 268 - 270 ^oC, Yield: 15 mg (13%)

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.61 (d, *J* = 3.5 Hz, 4H), 7.43 (d, *J* = 8.5 Hz, 2H), 7.38 – 7.37 (m, 2H), 7.31 - 7.22 (m, 8H), 6.93 (d, *J* = 8.5 Hz, 2H), 5.95 (d, *J* = 6.5 Hz, 1H), 5.29 (t, *J* = 7.5 Hz, 1H), 4.71 (s, 1H), 4.04 (s, 3H), 3.97 (s, 3H), 3.93 (d, *J* = 8.5 Hz, 1H), 3.83 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 195.96, 167.63, 159.36, 158.17, 153.19, 141.60, 137.12, 134.51, 131.33, 131.13, 128.37, 128.22, 128.10, 126.81, 126.49, 114.18, 112.37, 112.26, 111.80, 59.39, 55.38, 52.32, 47.77, 31.77, 31.68.

IR (film) ν_{max} : 3417, 1722, 1640, 1612 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{35}H_{31}N_3O_4$ is 558.2393; found 558.2407

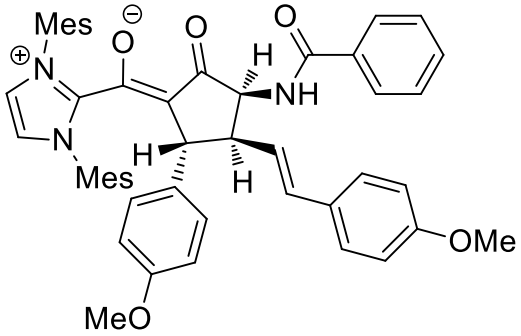
4z'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimethyl-1H-benzo[d]imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{35}H_{31}N_3O_4$, White solid; M.P: 250 - 252 ^oC, Yield: 46 mg (41%)

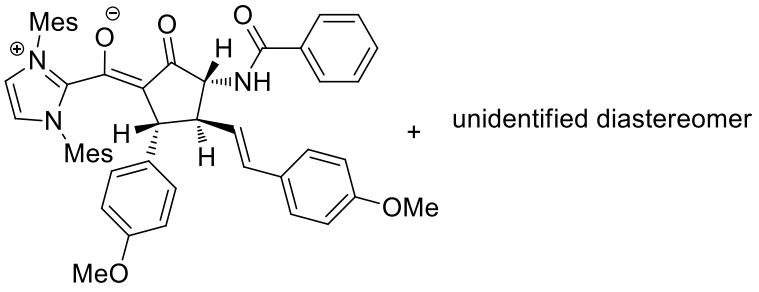
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.65 – 7.63 (m, 2H), 7.59 – 7.57 (m, 4H), 7.39 – 7.35 (m, 1H), 7.29 (d, *J* = 8.0 Hz, 2H), 7.12 – 7.04 (m, 3H), 7.01 (d, *J* = 7.0 Hz, 2H), 6.93 (d, *J* = 8.5 Hz, 2H), 6.64 (d, *J* = 8.5 Hz, 2H), 6.11 (d, *J* = 8.5 Hz, 1H), 5.39 (dd, *J* = 13.0, 9.0 Hz, 1H), 4.65 (d, *J* = 8.0 Hz, 1H), 4.04 (s, 3H), 3.97 – 3.89 (m, 4H), 3.72 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 195.86, 167.71, 159.10, 157.91, 153.26, 138.22, 134.26, 133.28, 131.39, 131.28, 129.33, 128.57, 128.21, 127.88, 127.09, 126.32, 113.82, 113.73, 113.31, 113.15, 112.38, 112.23, 58.30, 55.17, 53.19, 46.54, 31.85, 31.65.
IR (film) ν_{max} : 3302, 1731, 1634 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{35}H_{31}N_3O_4$ is 558.2393; found 558.2416.

6. (Z)-(3-benzamido-5-(4-methoxyphenyl)-4-((E)-4-methoxystyryl)-2-oxocyclopentylid ene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{50}H_{49}N_3O_5$, Yellow solid; M.P: 142 - 144 ^oC, Yield: 54 mg (35%)
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.63 – 7.61 (m, 2H), 7.40 (t, *J* = 7.0 Hz, 1H), 7.31 (t, *J* = 7.5 Hz, 2H), 7.24 (d, *J* = 2.0 Hz, 1H), 7.20 (d, *J* = 1.5 Hz, 1H), 7.09 (s, 1H), 7.05 (d, *J* = 8.5 Hz, 2H), 6.98 – 6.95 (m, 3H), 6.78 (d, *J* = 8.5 Hz, 2H), 6.53 – 6.49 (m, 4H), 6.38 (d, *J* = 5.0 Hz, 1H), 6.26 (d, *J* = 16.0 Hz, 1H), 5.64 (dd, *J* = 15.5, 9.0 Hz, 1H), 4.43 (t, J = 6.0 Hz, 1H), 3.93 (s, 1H), 3.79 (s, 3H), 3.73 (s, 3H), 3.34 – 3.19 (m, 1H), 2.44 (s, 3H), 2.41 (s, 3H), 2.38 (s, 3H), 2.35 (s, 3H), 2.26 (s, 3H), 2.14 (s, 3H).
^{13}C NMR (126 MHz, $CDCl_3$) δ 192.38, 167.59, 159.48, 158.61, 157.42, 149.78, 140.52, 140.28, 136.74, 136.56, 135.94, 135.77, 135.70, 135.03, 131.24, 131.13, 130.99, 130.64, 130.47, 129.90, 129.78, 129.17, 128.26, 128.04, 127.69, 127.16, 126.98, 121.82, 113.68, 113.34, 108.19, 58.88, 55.26, 55.20, 51.01, 46.31, 21.17, 18.45, 18.33, 18.27, 18.12.
IR (film) ν_{max} : 3403, 1704, 1640, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{50}H_{49}N_3O_5$ is 772.3750; found 772.3765.

6'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-4-((E)-4-methoxystyryl)-2-oxocyclopentylid ene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate. (Inseparable mixture of two diasteromers (1:1))



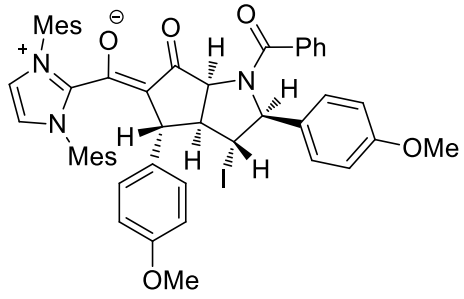
Chemical Formula: $C_{50}H_{49}N_3O_5$, Yellow solid; M.P: 142 - 144 ^oC, Yield: 55 mg (36%)

^1H NMR (500 MHz, $CDCl_3$) δ 7.69 - 7.66 (m, 4H), 7.43 – 7.39 (m, 2H), 7.38 - 7.32 (m, 4H), 7.19 (dd, *J* = 4.0, 1.5 Hz, 2H), 7.15 – 7.12 (m, 4H), 7.11 (s, 1H), 7.07 (d, *J* = 8.5 Hz, 1H), 7.04 (s, 1H), 7.00 (d, *J* = 8.5 Hz, 3H), 6.95 (d, *J* = 4.5 Hz, 2H), 6.90 (d, *J* = 6.5 Hz, 2H), 6.83 – 6.81 (m, 1H), 6.75 (d, *J* = 8.5 Hz, 2H), 6.69 (d, *J* = 8.5 Hz, 2H), 6.49 - 6.46 (m, 4H), 6.39 (dd, J = 8.5, 2.5 Hz, 4H), 6.16 (d, *J* = 8.0 Hz, 2H), 6.10 (dd, *J* = 15.5, 8.0 Hz, 1H), 5.90 (d, *J* = 16.0 Hz, 1H), 5.44 (dd, *J* = 15.5, 9.0 Hz, 1H), 4.61 (dd, *J* = 12.0, 8.0 Hz, 1H), 4.51 (dd, *J* = 10.0, 8.0 Hz, 1H), 4.03 (d, *J* = 8.0 Hz, 1H), 3.75 (s, 6H), 3.72 (s, 3H), 3.72 (s, 3H), 3.60 (d, *J* = 8.0 Hz, 1H), 2.75 – 2.70 (m, 1H), 2.51 (s, 3H), 2.48 (d, *J* = 3.0 Hz, 6H), 2.44 (s, 3H), 2.38 (s, 3H), 2.35 (s, 3H), 2.31 (s, 3H), 2.31 (s, 3H), 2.24 (s, 3H), 2.19 (s, 3H), 2.12 (d, *J* = 8.4 Hz, 1H), 2.08 (s, 3H), 2.02 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.91, 192.25, 175.65, 167.93, 167.63, 160.14, 159.24, 158.59, 158.50, 157.93, 157.41, 157.08, 149.31, 149.16, 140.55, 140.49, 140.29, 140.09, 136.98, 136.60, 136.45, 136.36, 136.19, 135.92, 135.86, 135.07, 134.95, 133.03, 132.95, 131.35, 131.28, 131.15, 131.08, 130.97, 130.70, 130.60, 130.17, 129.90, 129.75, 129.62, 129.56, 129.52, 129.40, 129.34, 129.24, 129.19, 128.41, 128.22, 128.15, 128.07, 127.35, 127.32, 127.18, 127.12, 122.00, 121.97, 121.90, 121.67, 113.81, 113.70, 113.65, 113.00, 112.95, 110.81, 109.07, 61.29, 59.70, 56.87, 55.24, 55.21, 55.13, 52.71, 47.77, 45.69, 35.76, 21.23, 21.13, 21.06, 18.48, 18.45, 18.39, 18.36, 18.19, 18.04.

IR (film) ν_{max} : 3415, 1716, 1641, 1607 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{50}H_{49}N_3O_5$ is 772.3751; found 772.3743.

7. (Z)-(1-benzoyl-3-iodo-2,4-bis(4-methoxyphenyl)-6-oxohexahydrocyclopenta[b]pyrrol-5(1H)-ylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



Chemical Formula: $C_{50}H_{48}IN_3O_5$, White solid; M.P: 135 - 137 ^oC, Yield: 88 mg (98%)

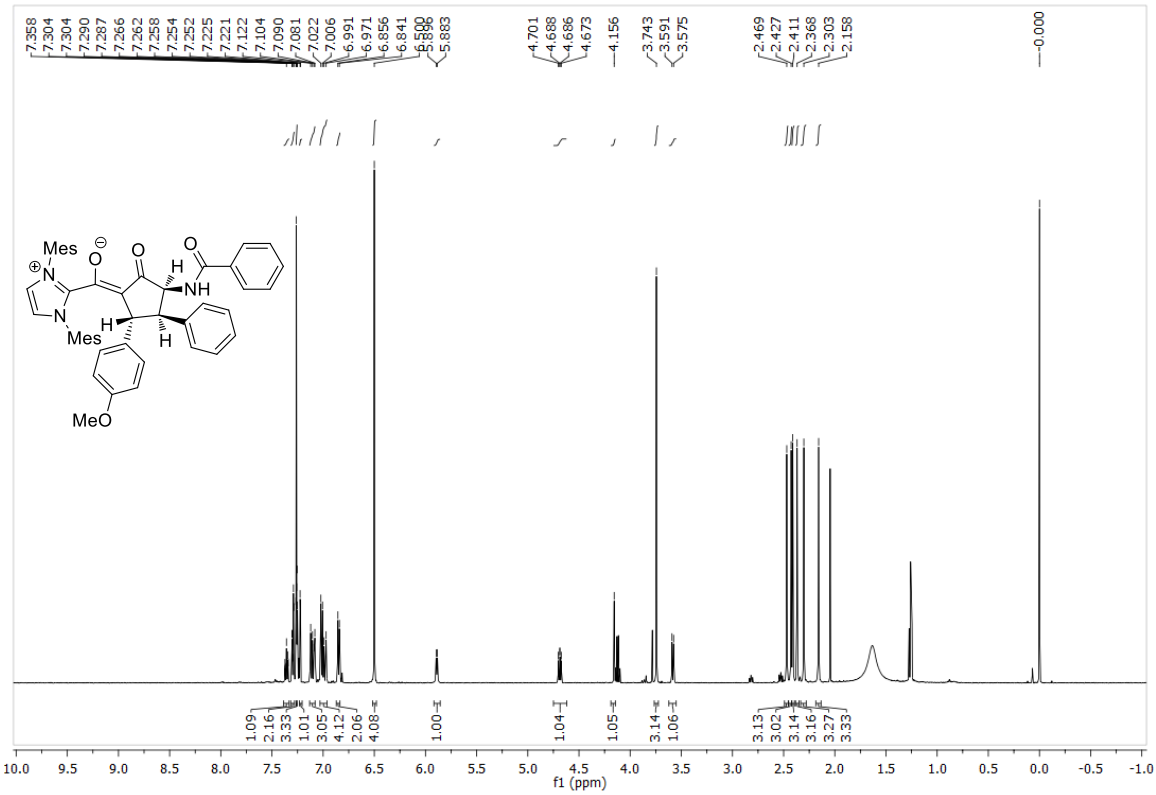
^1H NMR (500 MHz, $CDCl_3$) δ 8.10 (d, *J* = 7.5 Hz, 2H), 7.46 - 7.41 (m, 3H), 7.35 (t, *J* = 7.5 Hz, 2H), 7.23 (s, 1H), 7.20 (s, 1H), 7.03 (s, 1H), 6.92 (d, *J* = 9.0 Hz, 2H), 6.87 (d, *J* = 7.5 Hz, 3H), 6.46 (d, *J* = 8.5 Hz, 2H), 6.41 (d, *J* = 8.5 Hz, 2H), 5.35 (d, *J* = 10.0 Hz, 1H), 4.23 (d, *J* = 7.5 Hz, 1H), 3.82 (s, 4H), 3.70 (s, 3H), 3.59 (t, *J* = 10.5 Hz, 1H), 2.69 (dd, *J* = 10.5, 7.5 Hz, 1H), 2.59 (s, 3H), 2.49 (s, 3H), 2.40 (s, 3H), 2.27 (s, 3H), 2.22 (s, 3H), 2.01 (s, 3H).

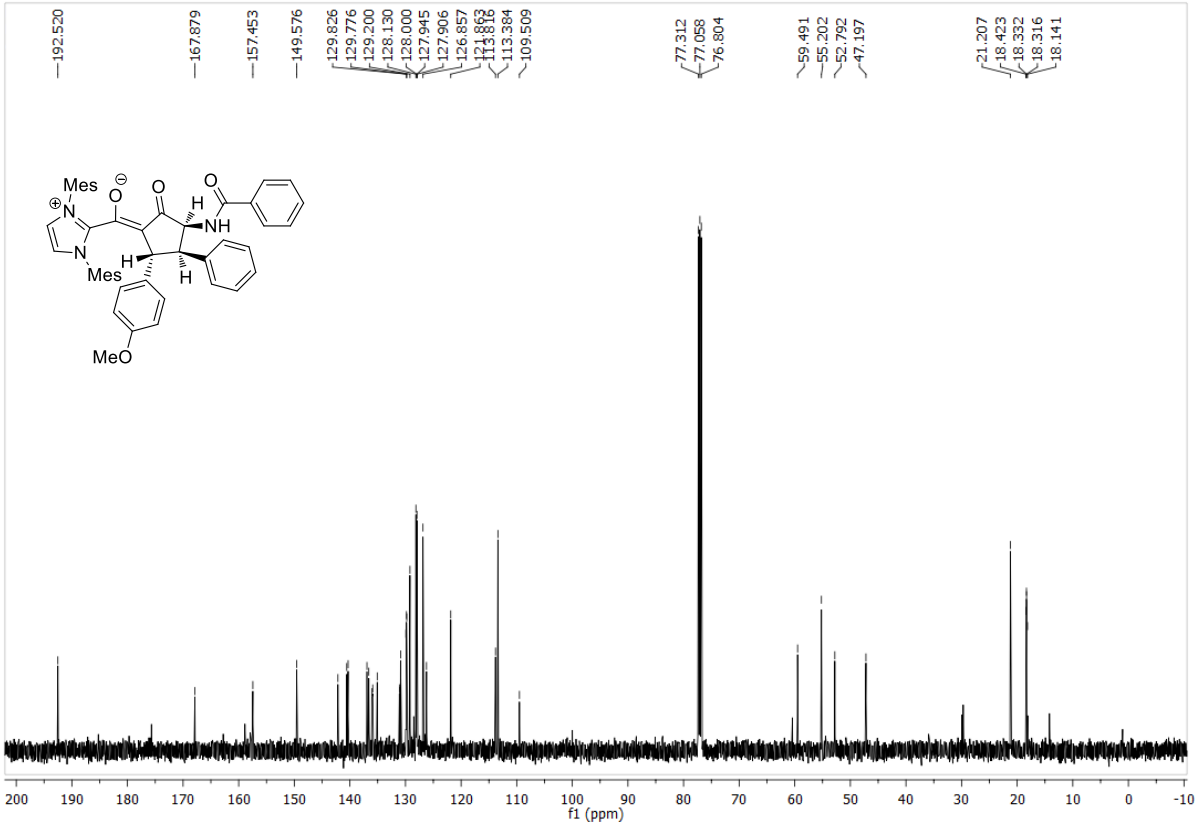
^{13}C NMR (126 MHz, $CDCl_3$) δ 191.32, 170.83, 161.41, 158.76, 157.46, 149.09, 140.72, 140.30, 136.66, 136.18, 135.97, 135.85, 135.39, 135.30, 132.52, 131.23, 131.11, 130.50, 129.88, 129.70, 129.42, 129.18, 128.14, 127.71, 127.58, 122.39, 121.88, 113.78, 113.38, 107.66, 72.24, 69.20, 59.34, 55.30, 55.14, 43.26, 34.40, 21.18, 21.10, 18.73, 18.30, 18.19.

IR (film) ν_{max} : 3056, 1717, 1636, 1611 cm^{-1}; HRMS (ESI) $(M+H)^+$: calculated for $C_{50}H_{48}IN_3O_5$ is 898.2717; found 898.2716.

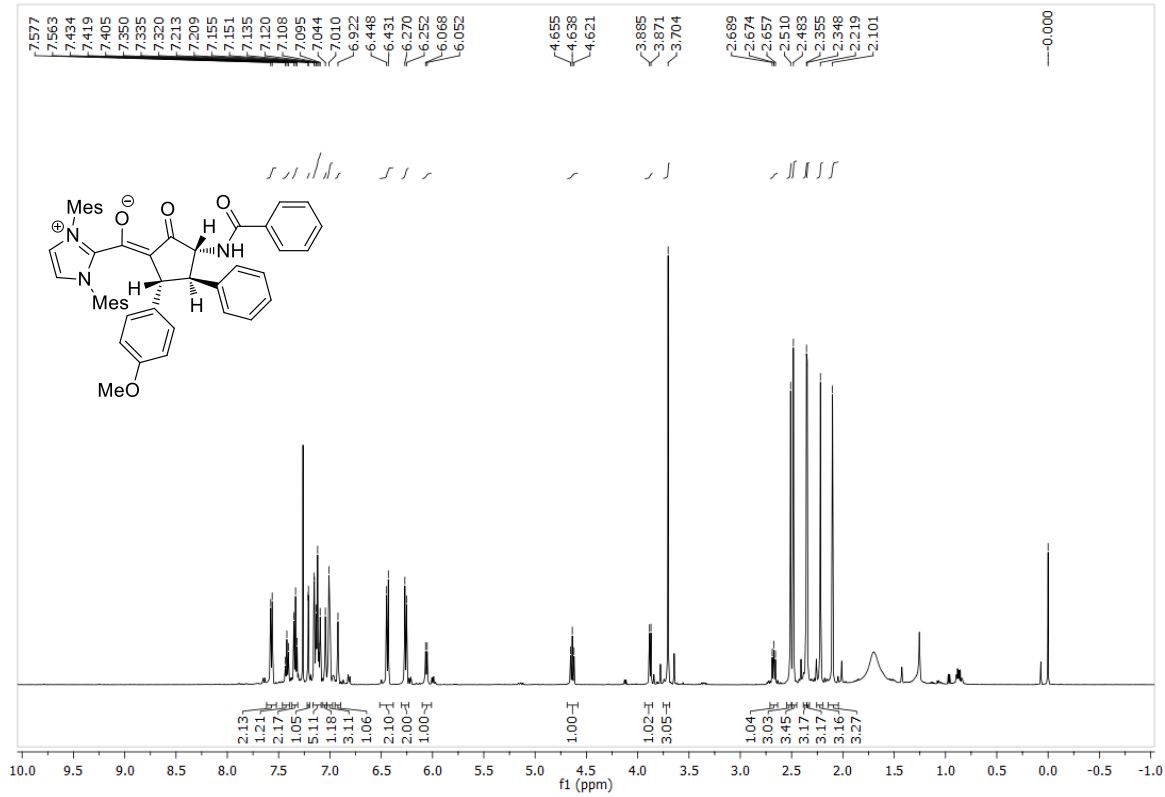
^{1}H and ^{13}C NMR spectra of compounds

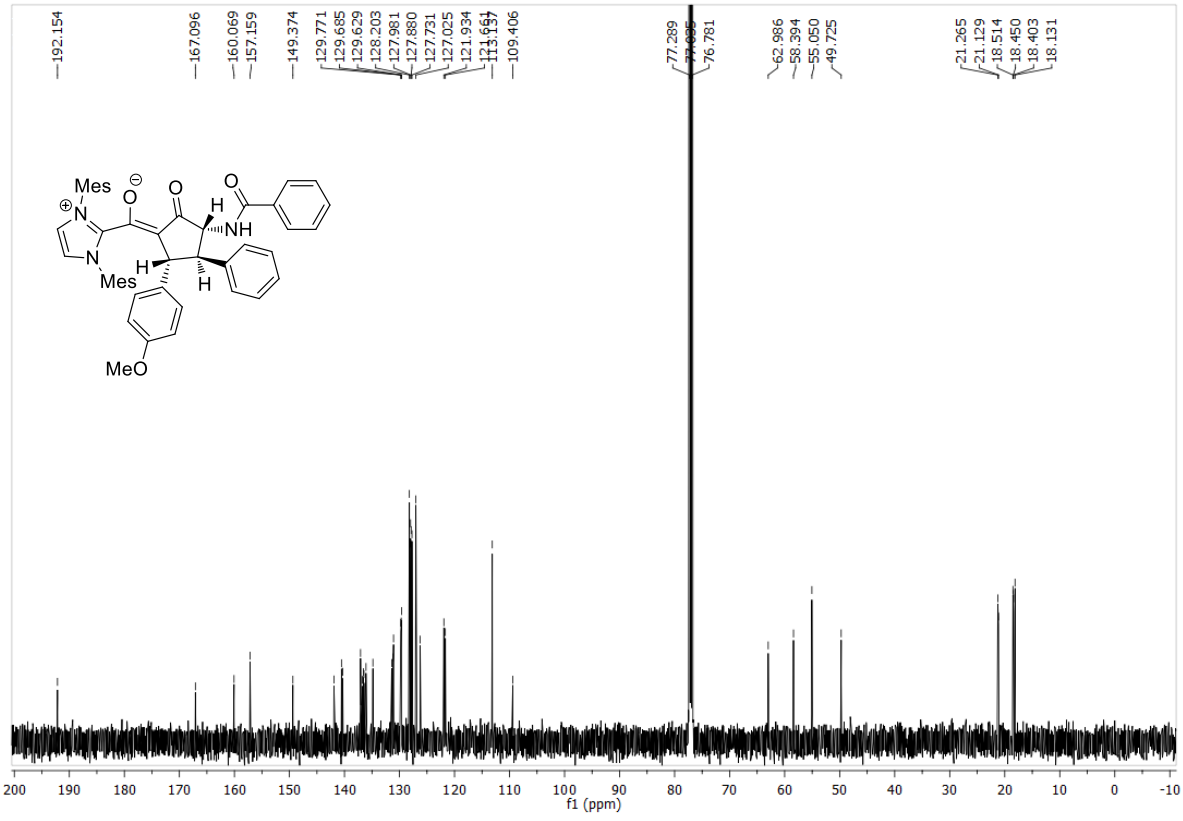
4a. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



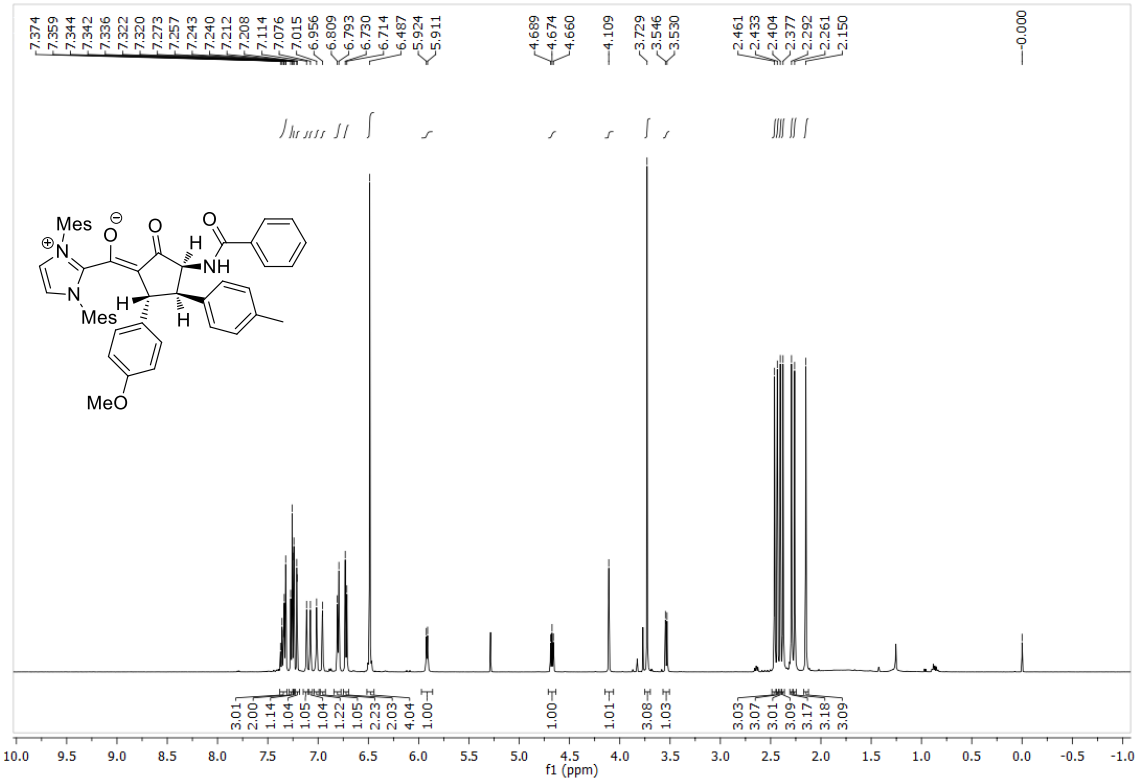


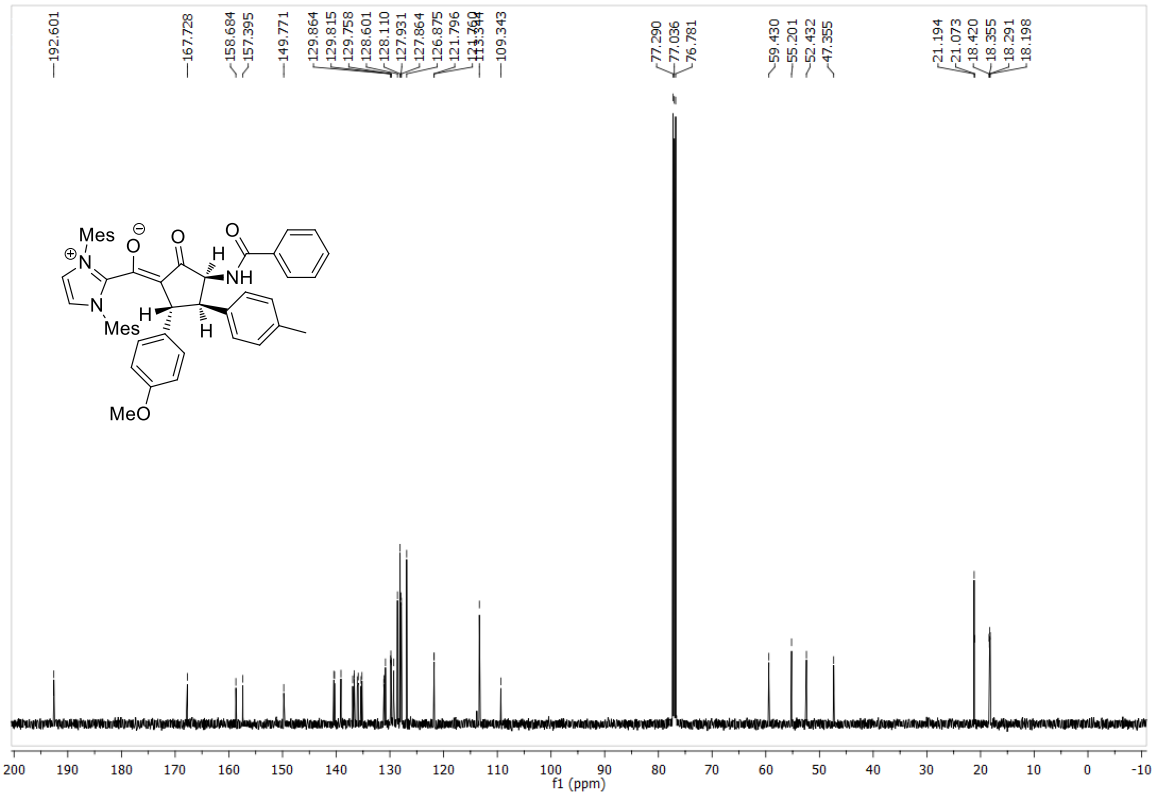
4a'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



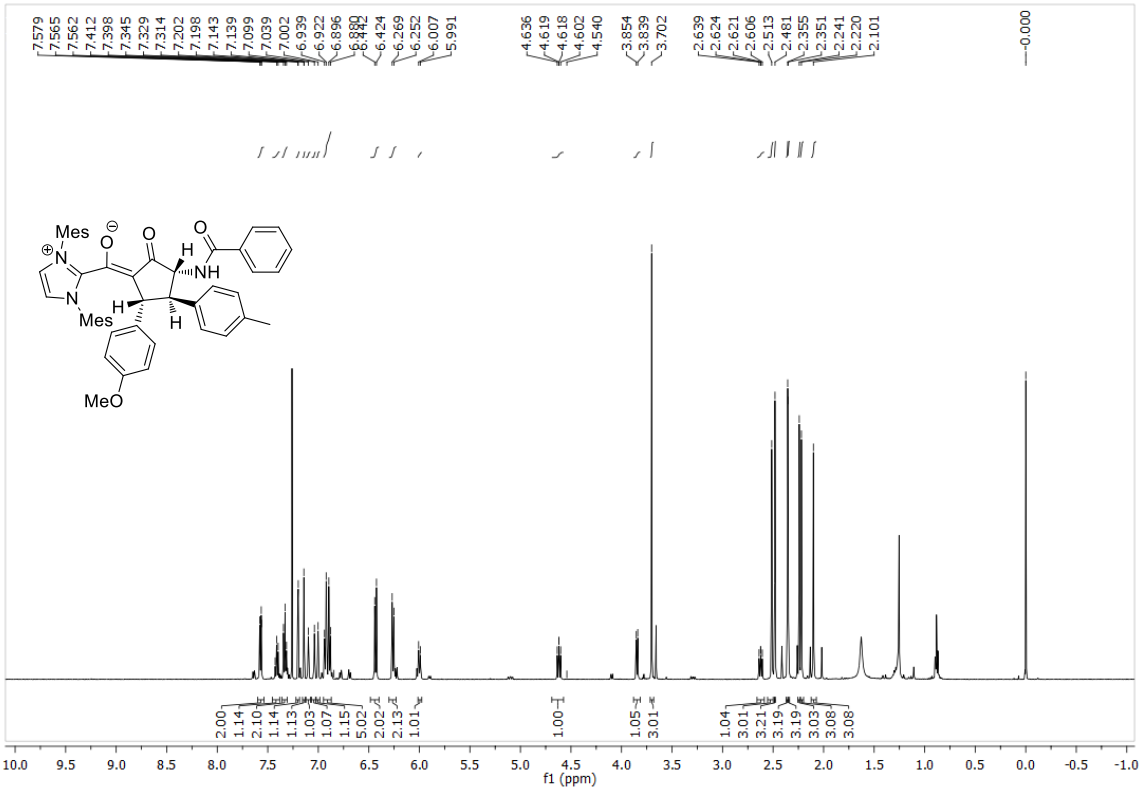


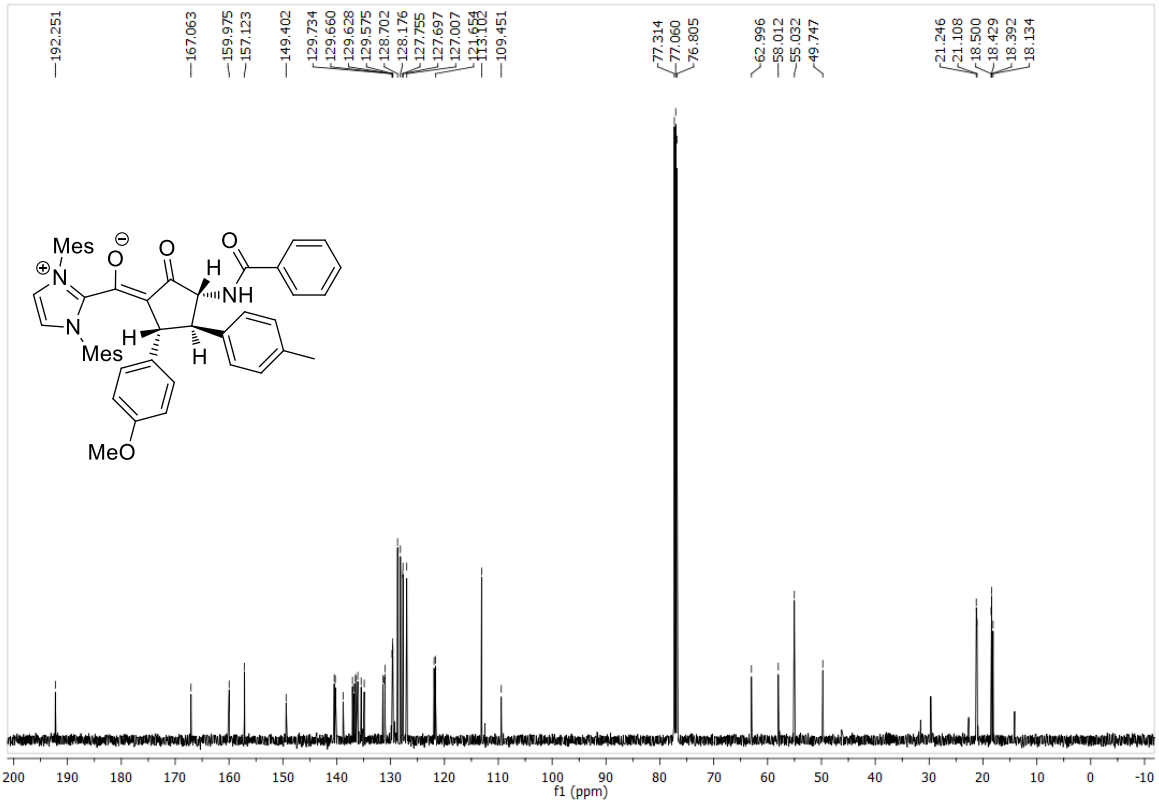
4b. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate.



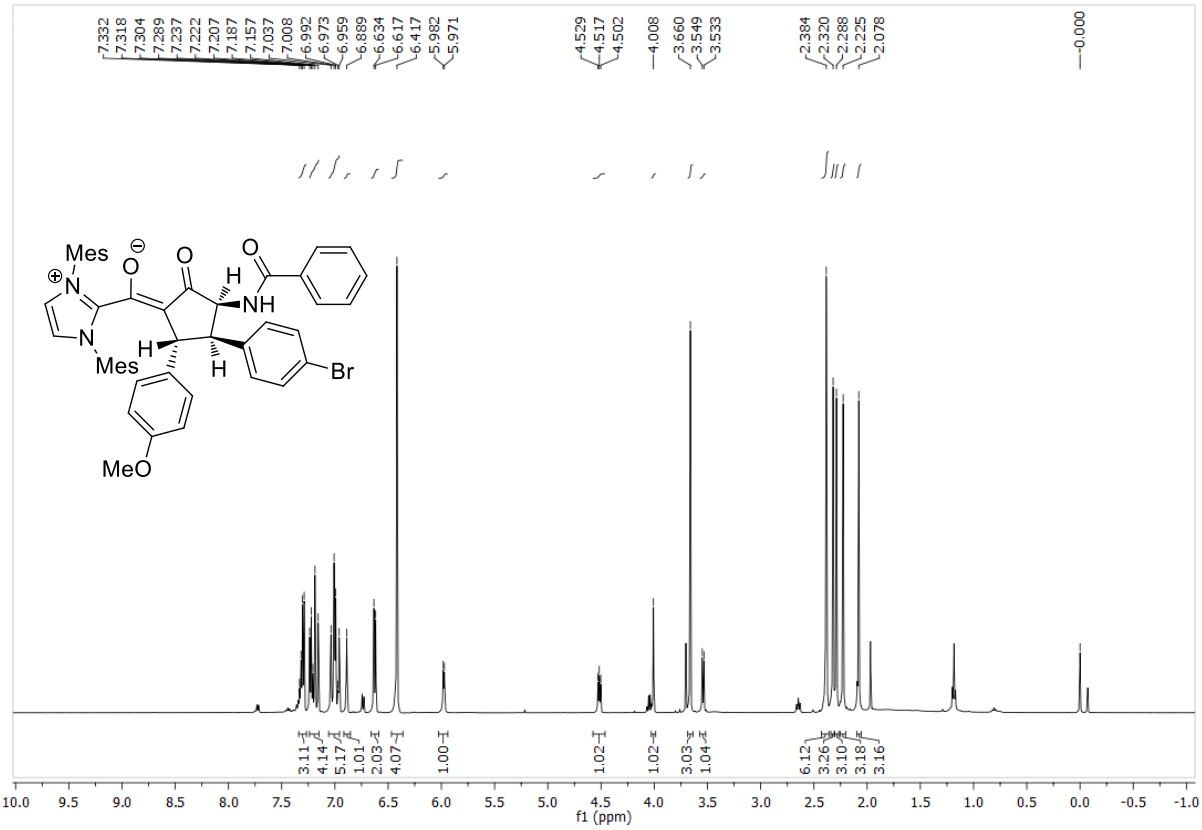


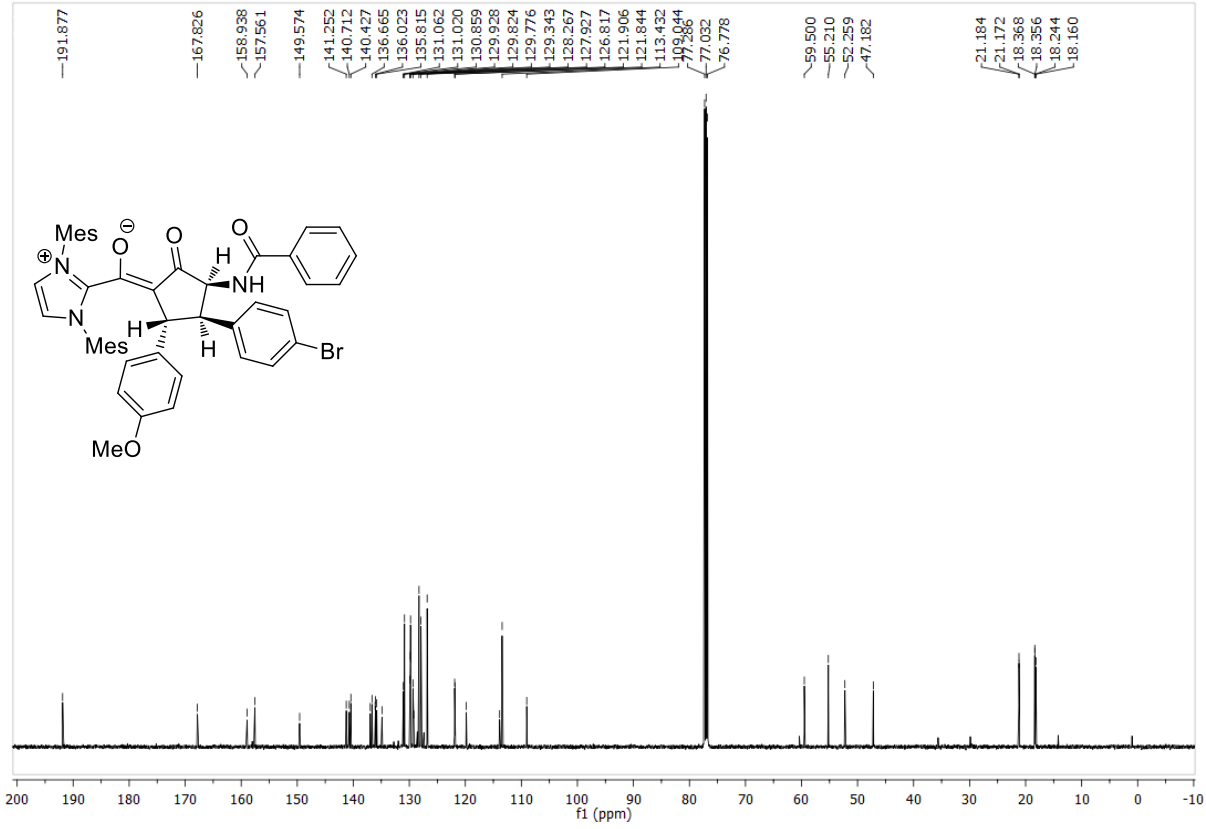
4b’. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



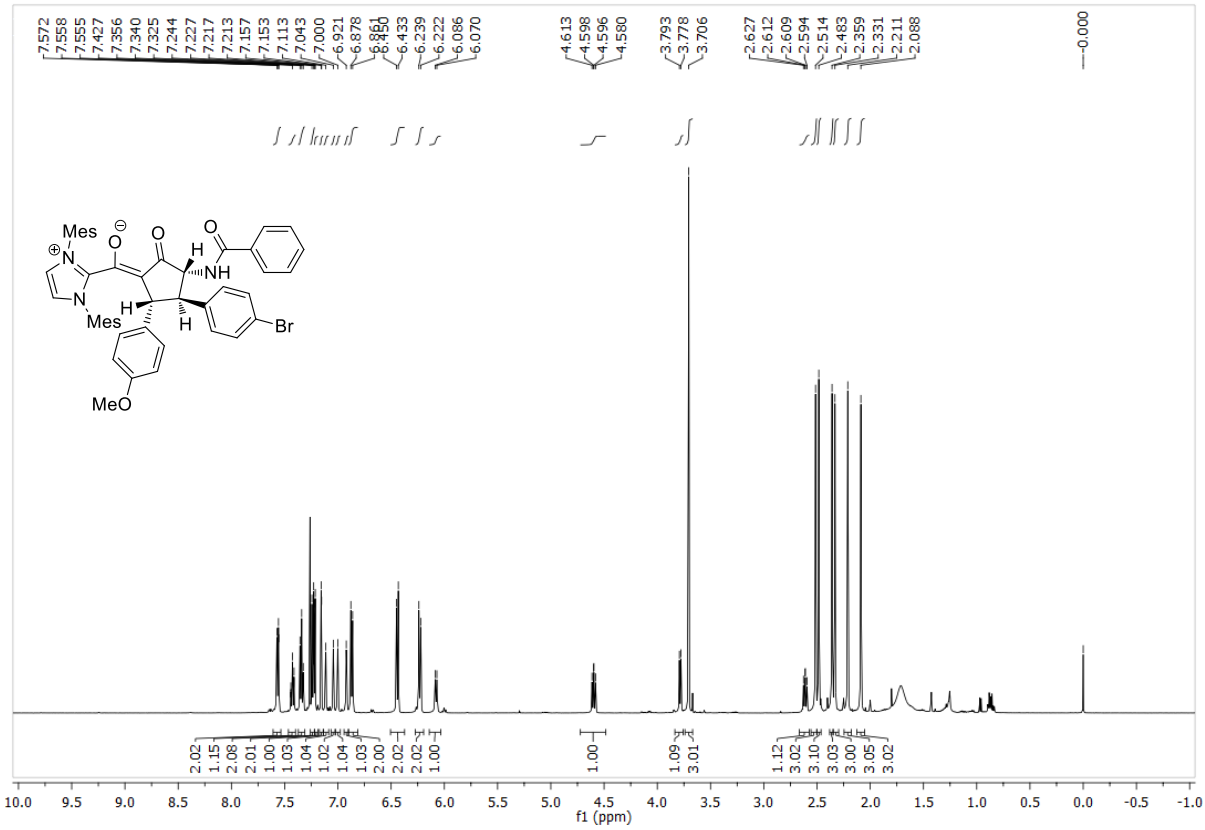


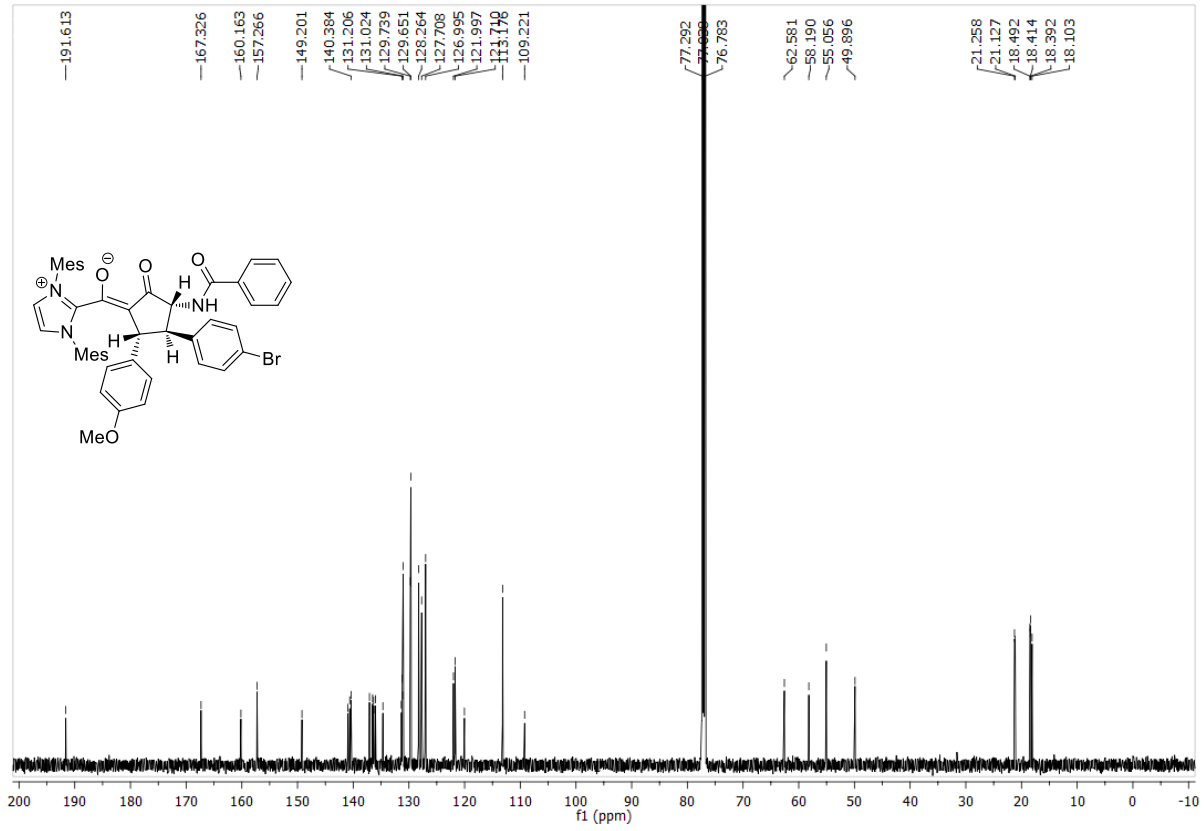
4c. (Z)-(3-benzamido-4-(4-bromophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



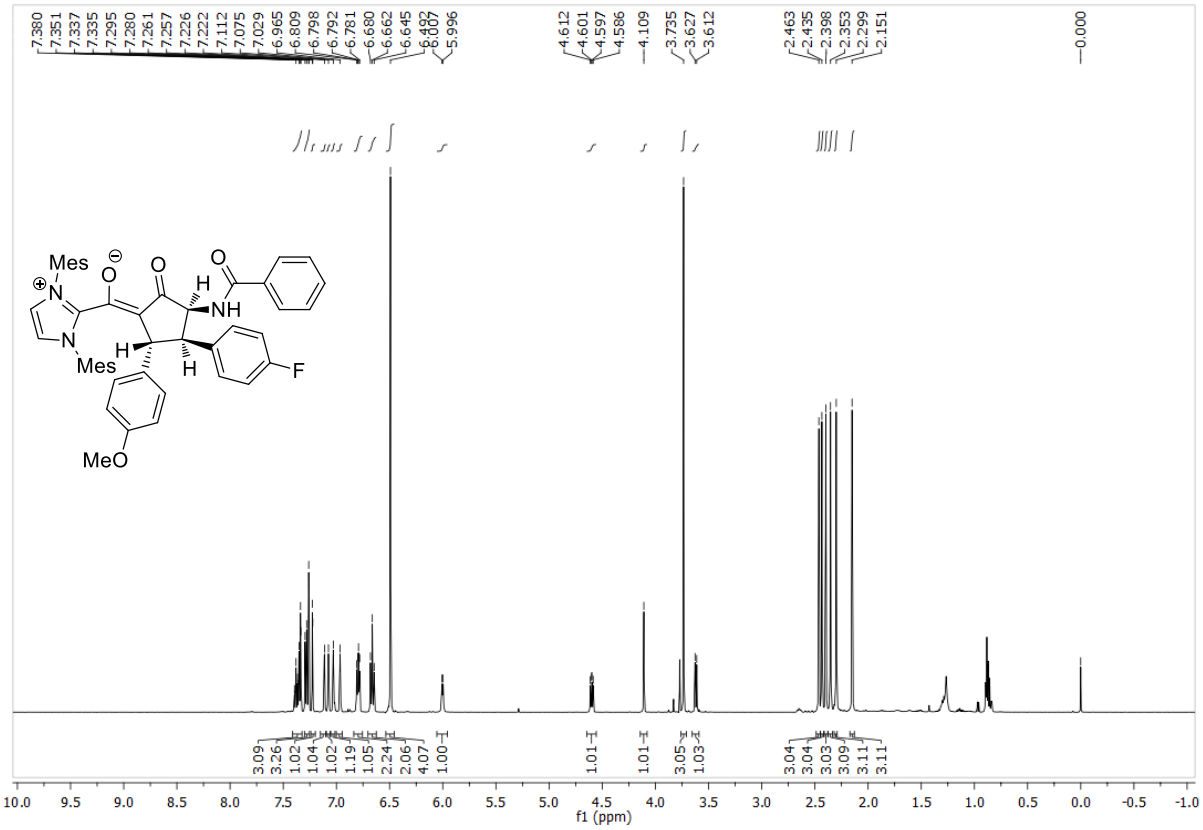


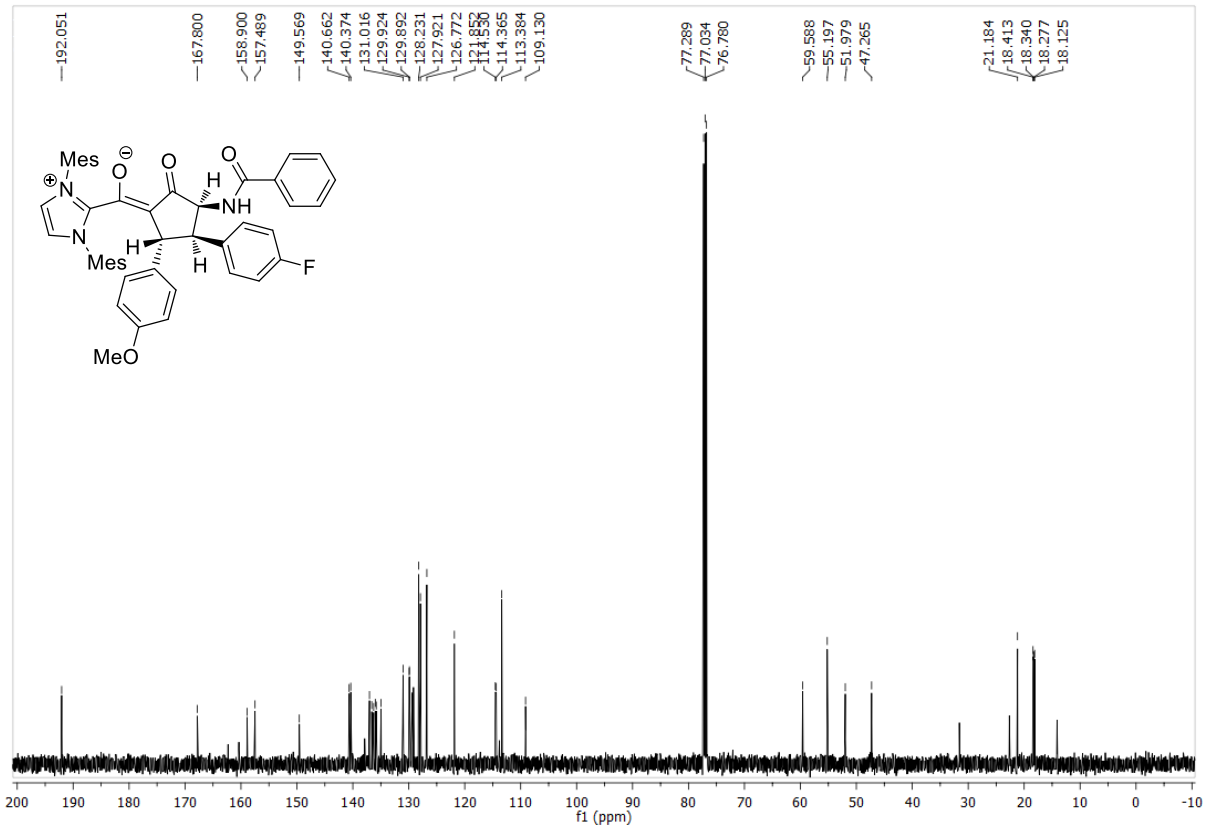
4c’. (Z)-(3-benzamido-4-(4-bromophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



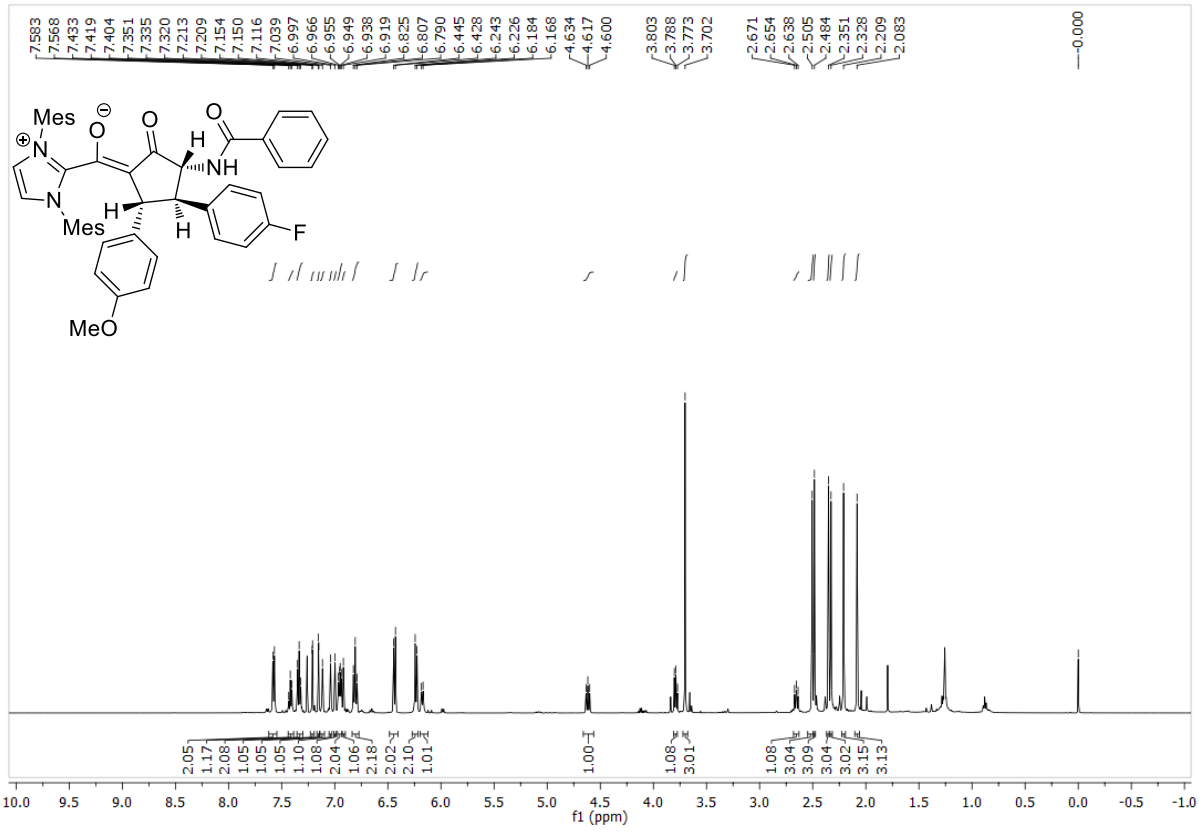


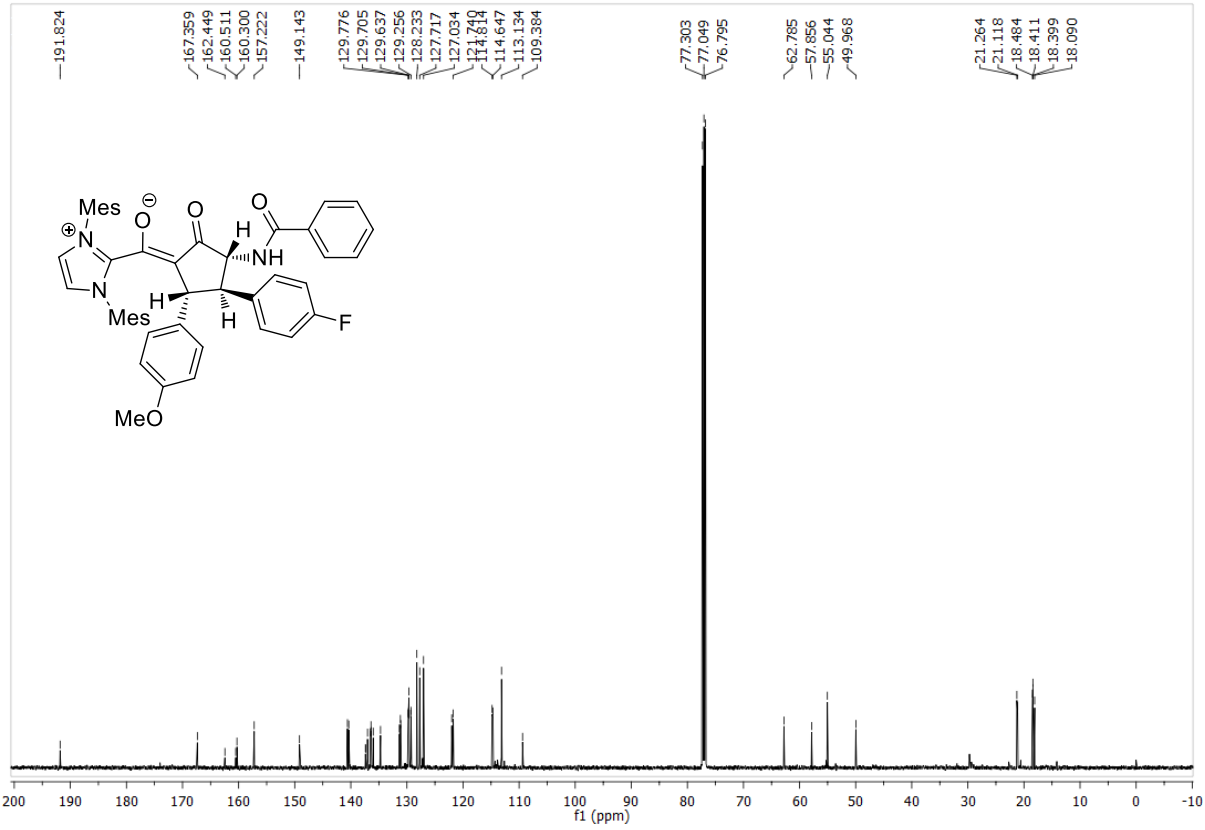
4d. (Z)-(3-benzamido-4-(4-fluorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



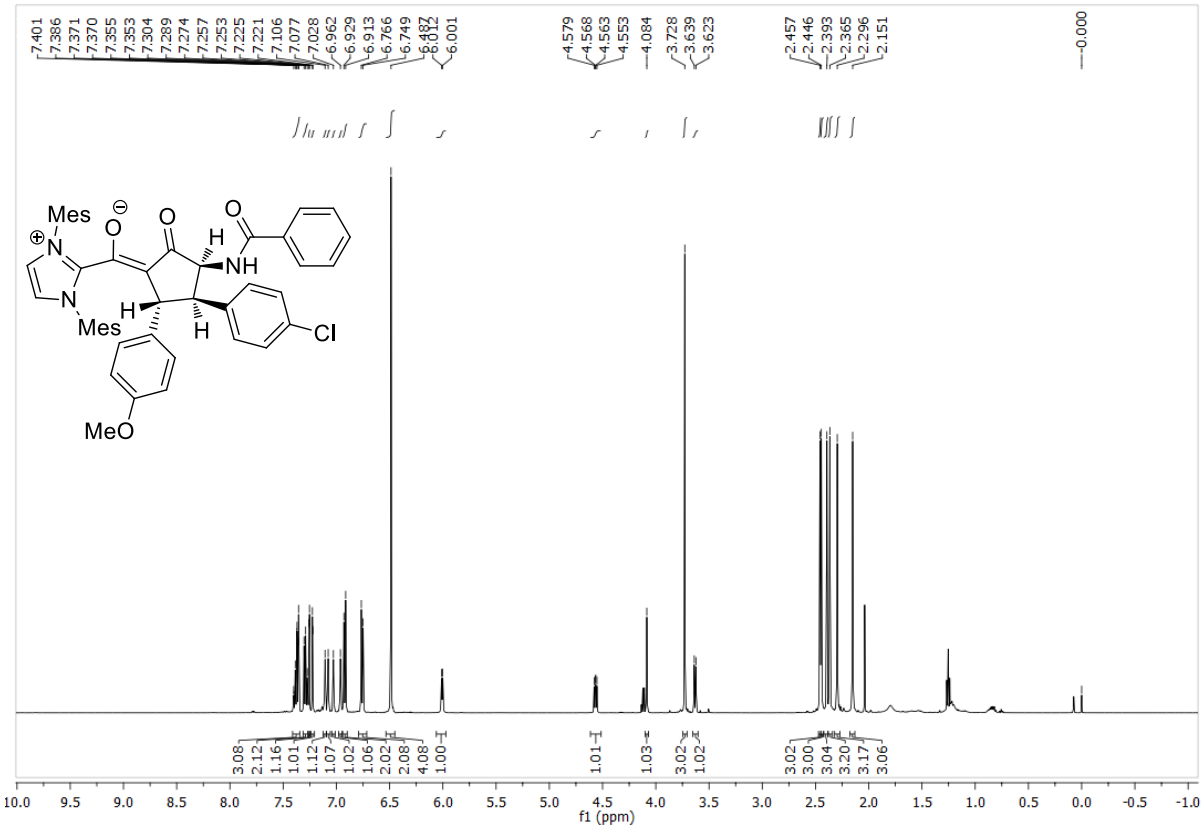


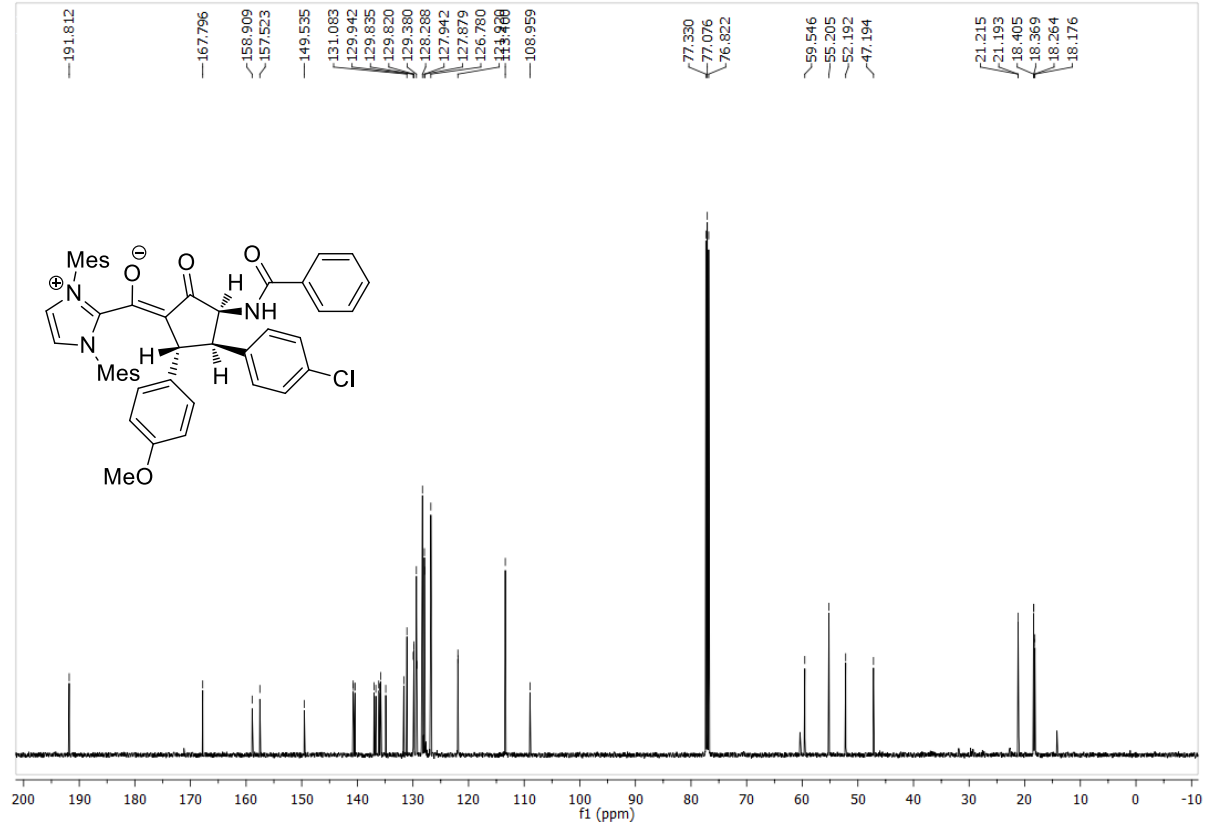
4d’. (Z)-(3-benzamido-4-(4-fluorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



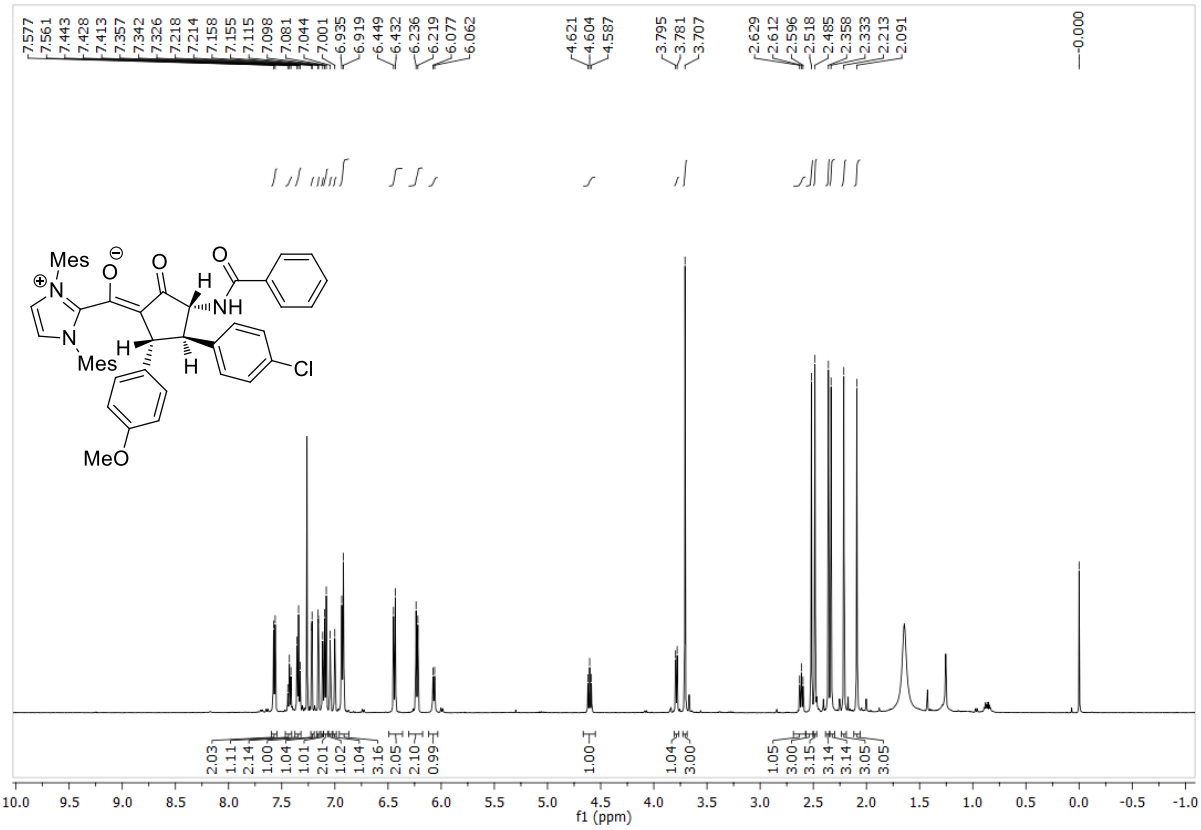


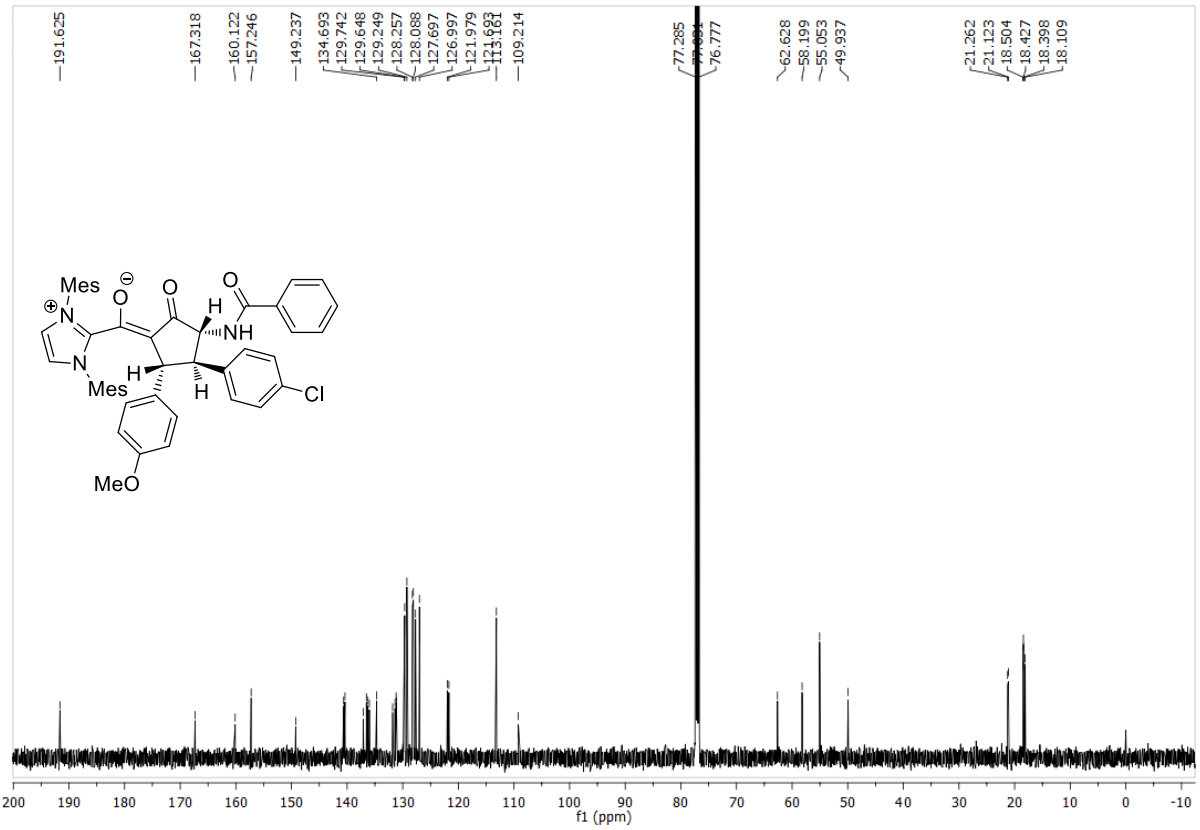
4e. (Z)-(3-benzamido-4-(4-chlorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



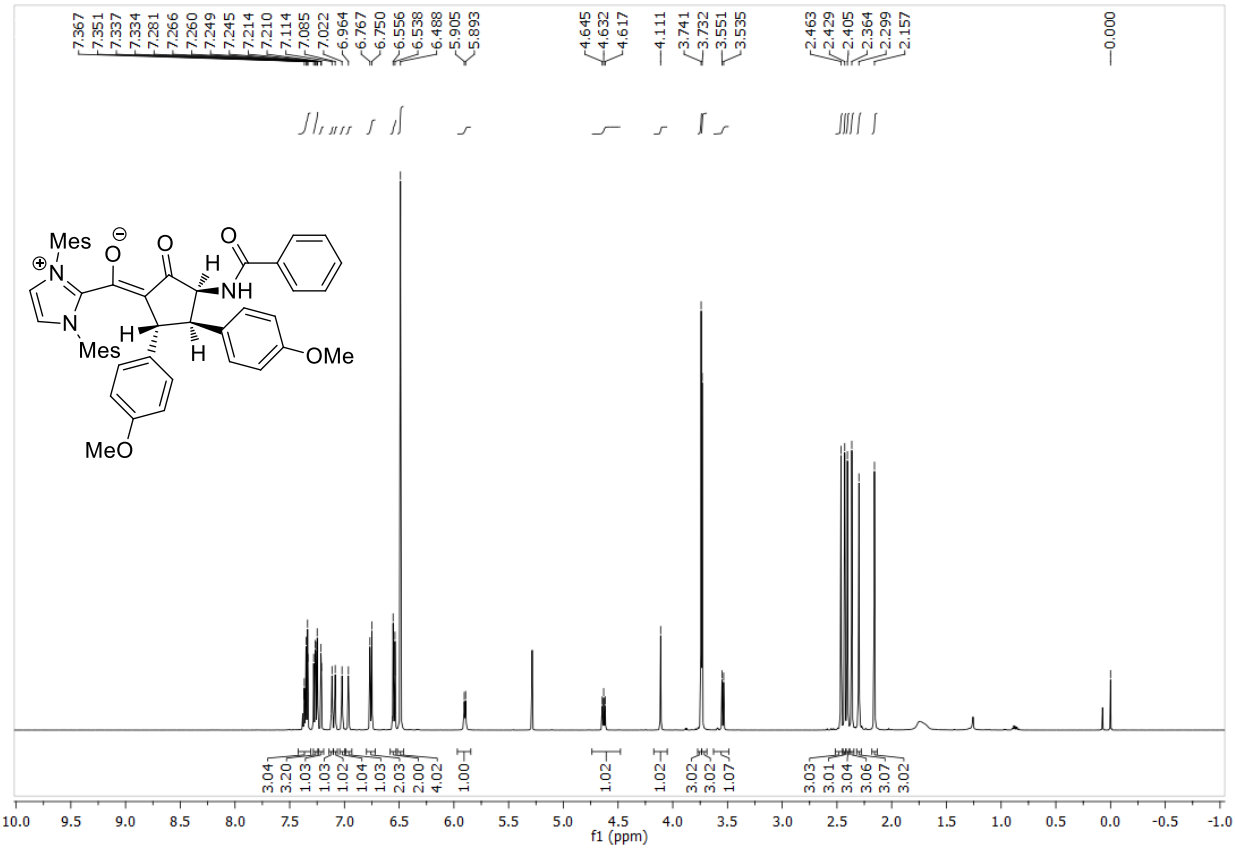


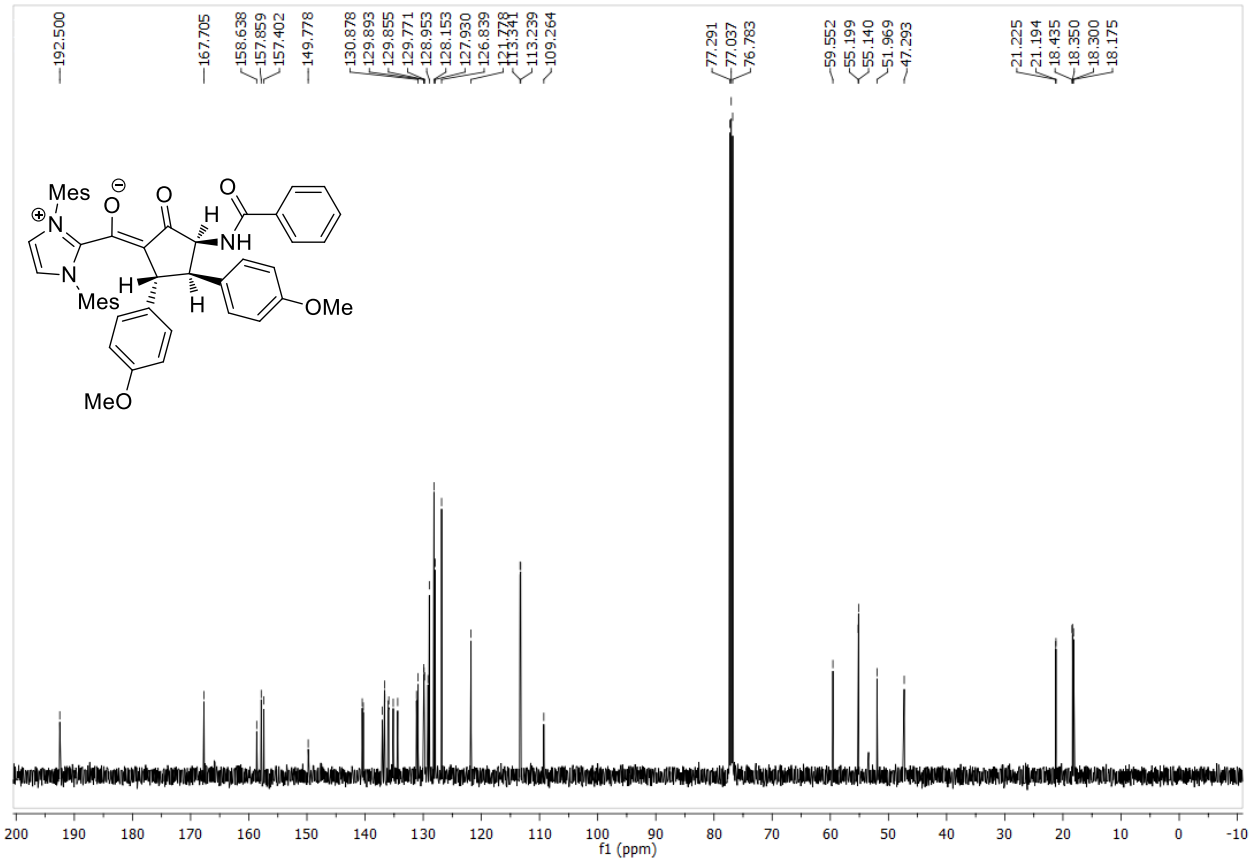
4e’. (Z)-(3-benzamido-4-(4-chlorophenyl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



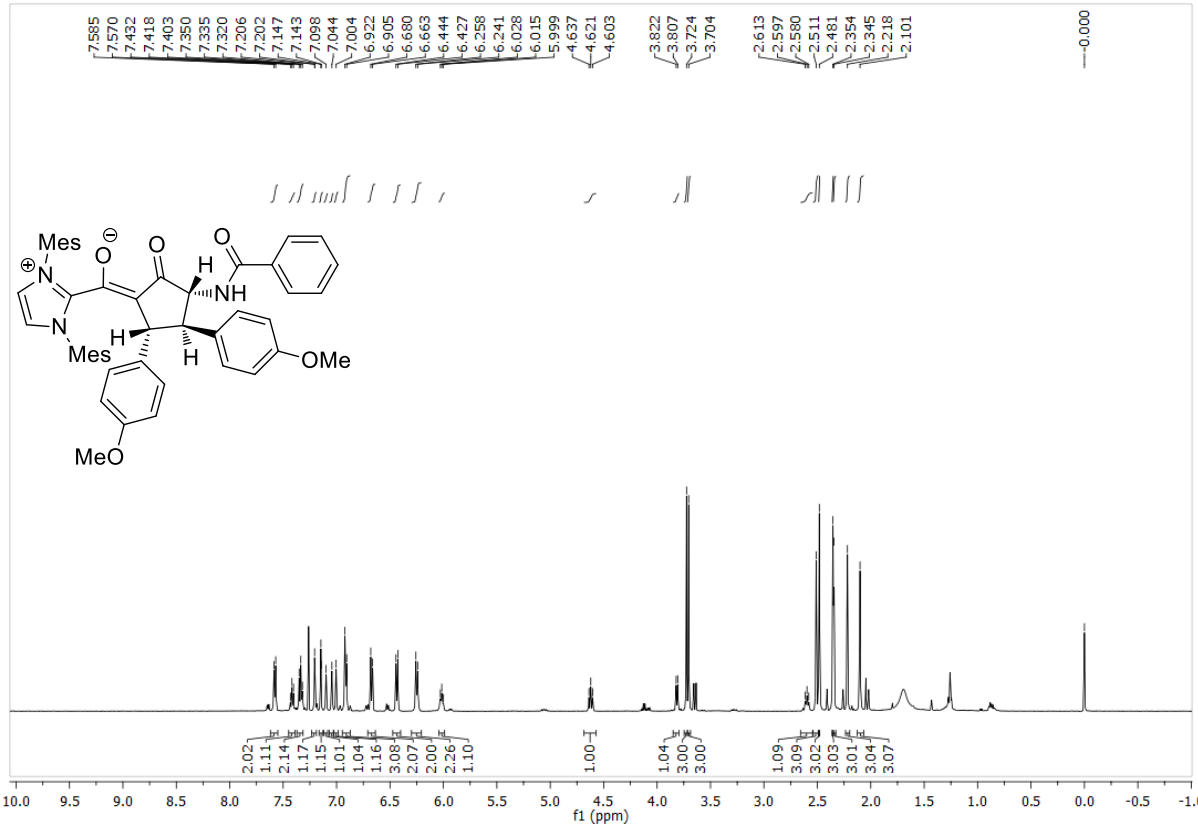


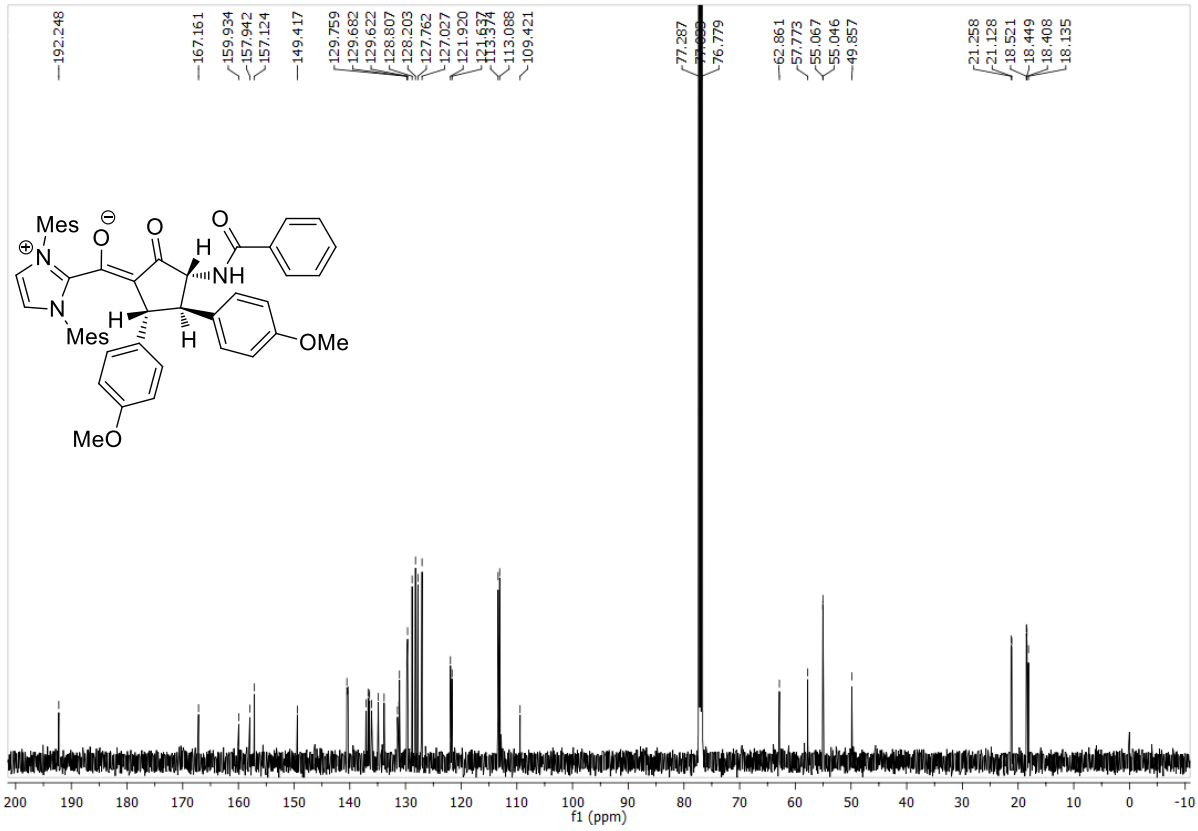
4f. (Z)-(3-benzamido-4,5-bis(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



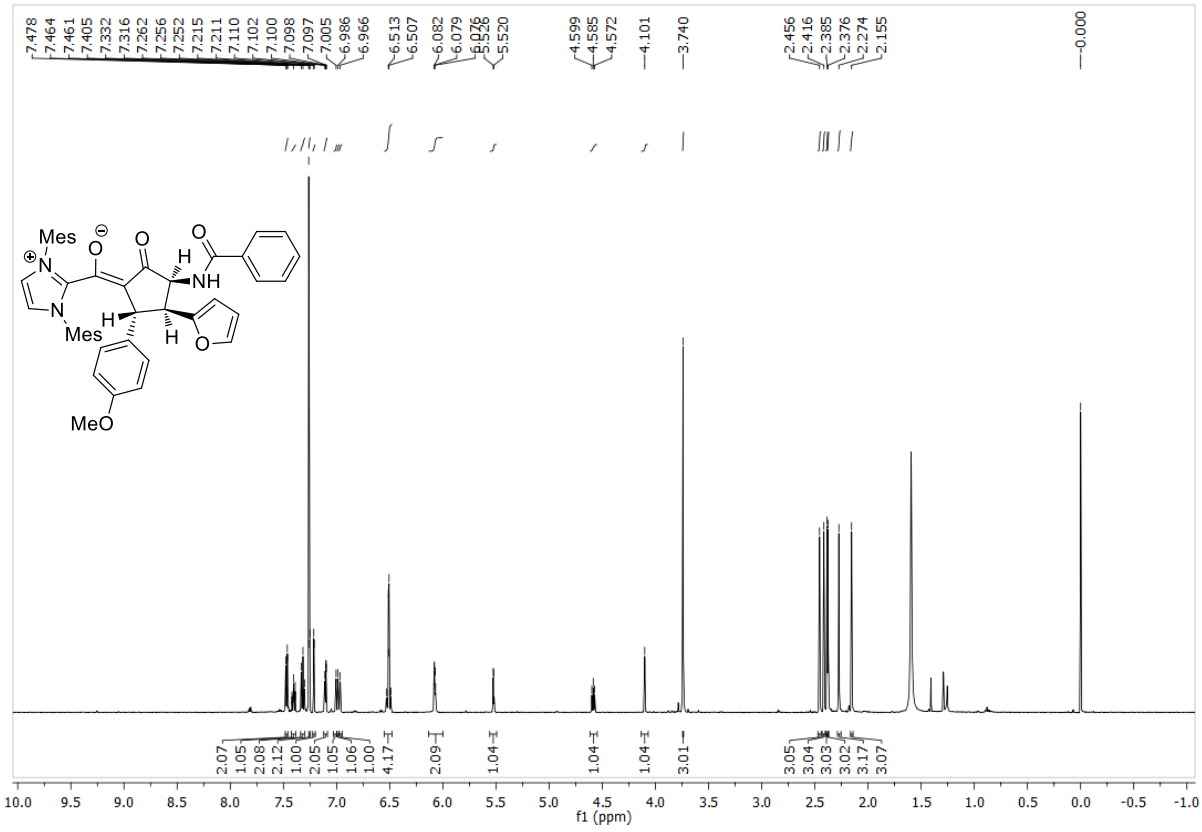


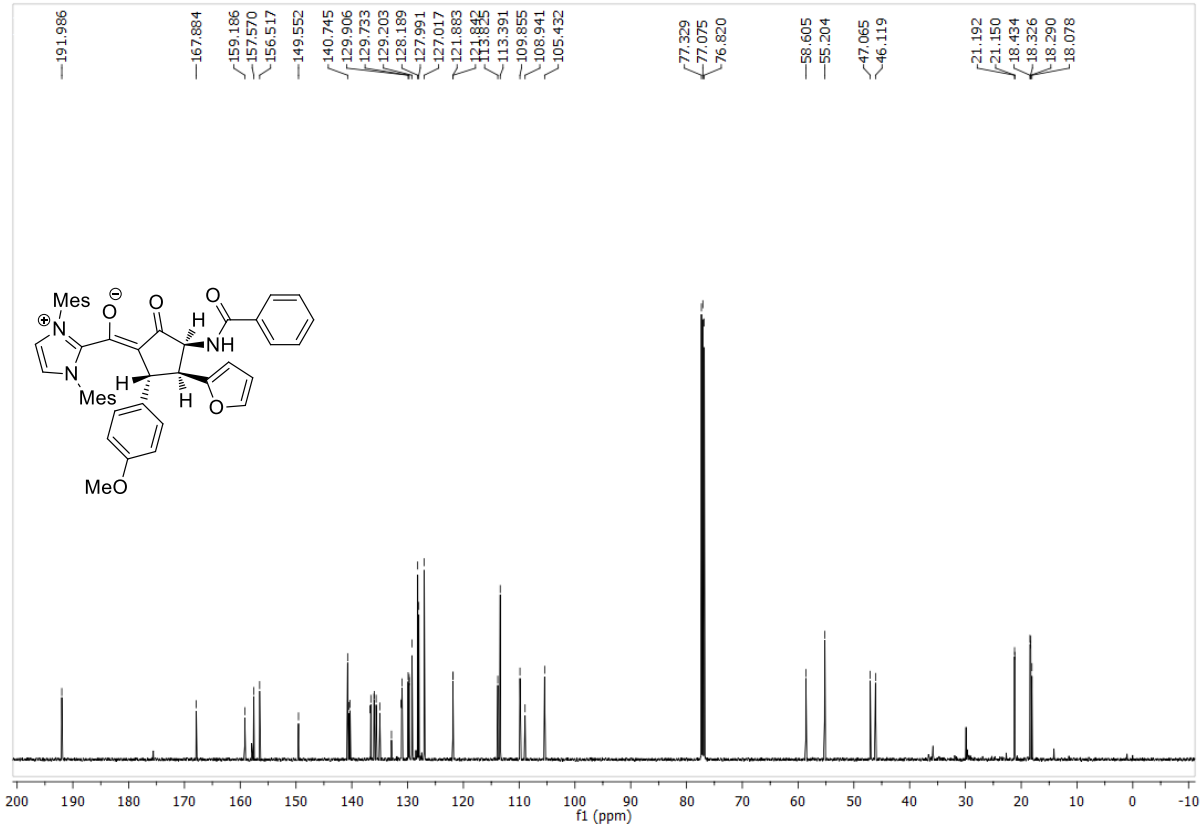
4f'. (Z)-(3-benzamido-4,5-bis(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



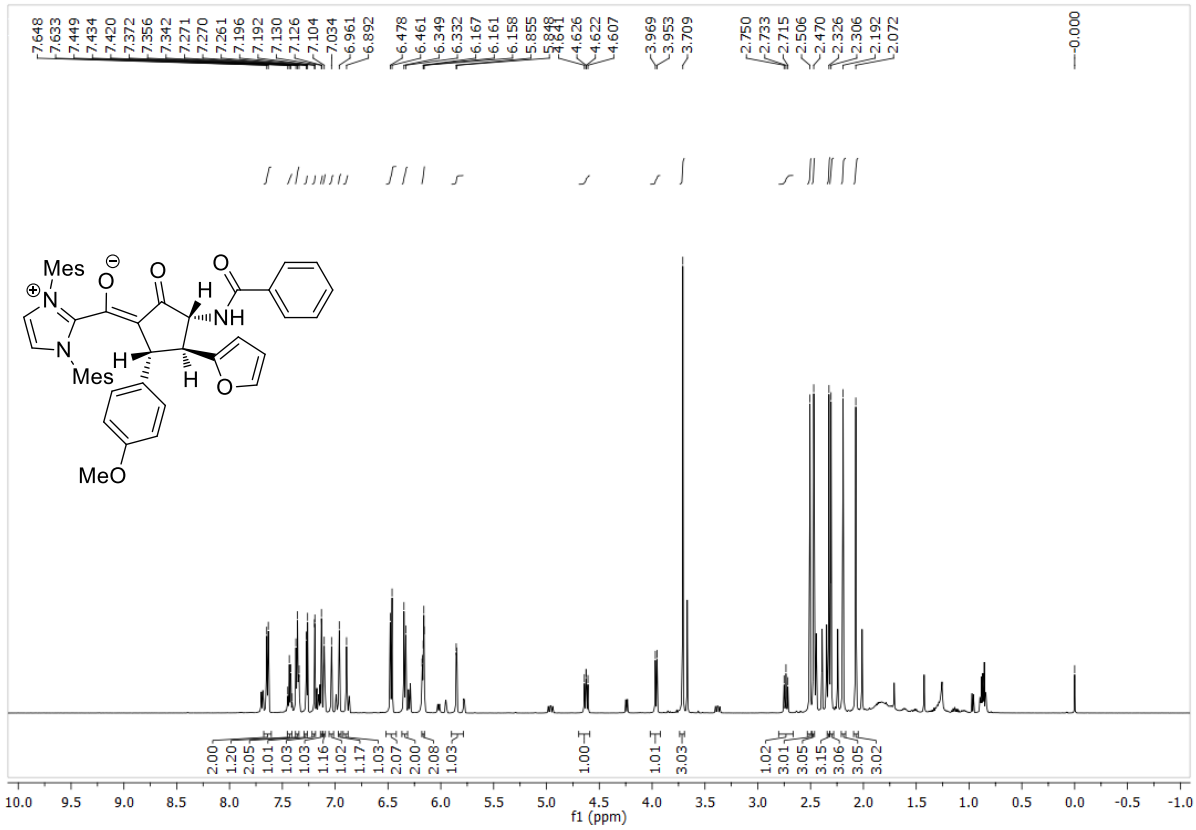


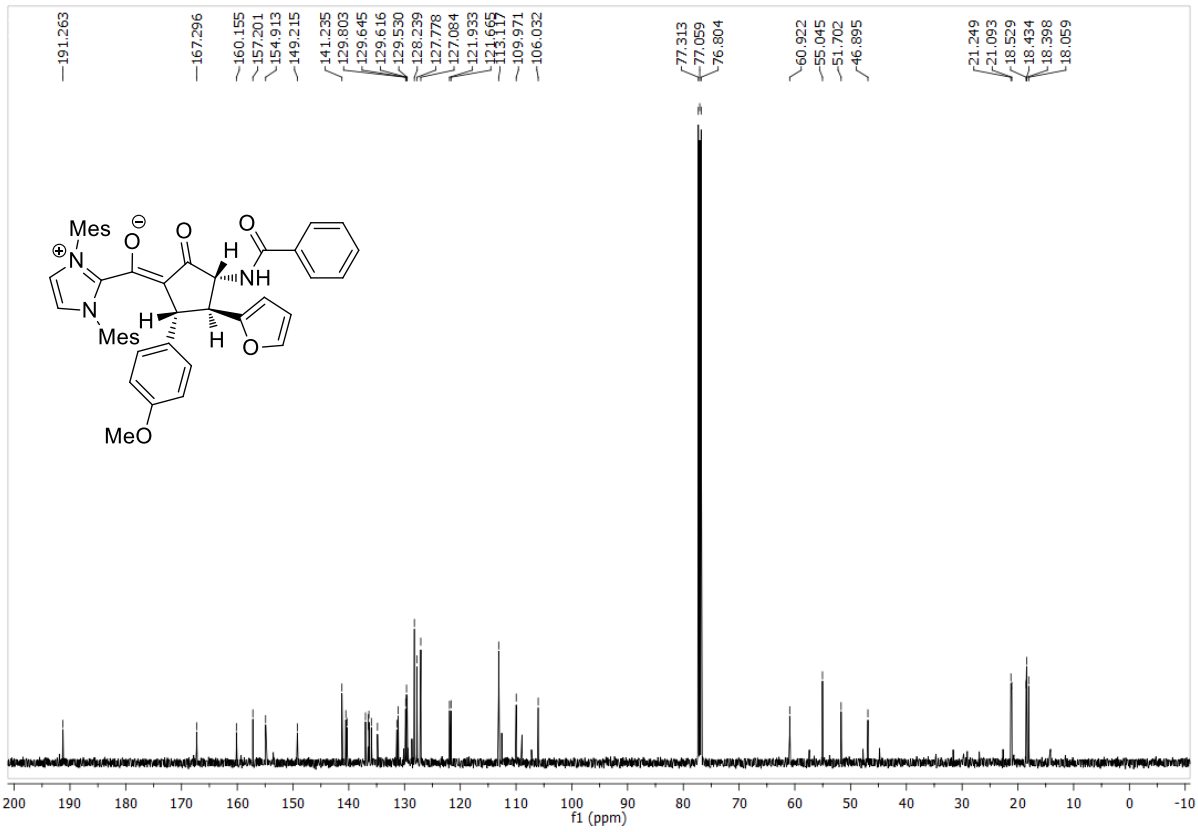
4g. (Z)-(3-benzamido-4-(furan-2-yl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



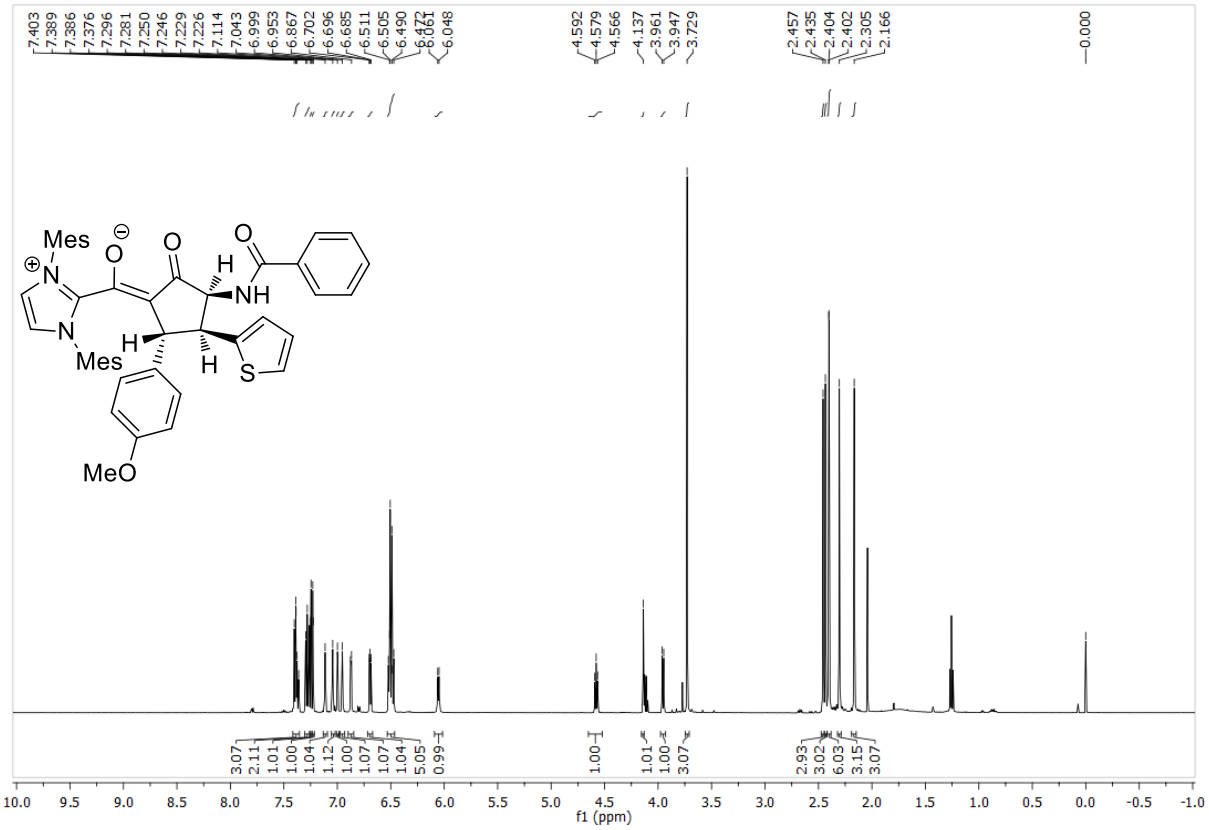


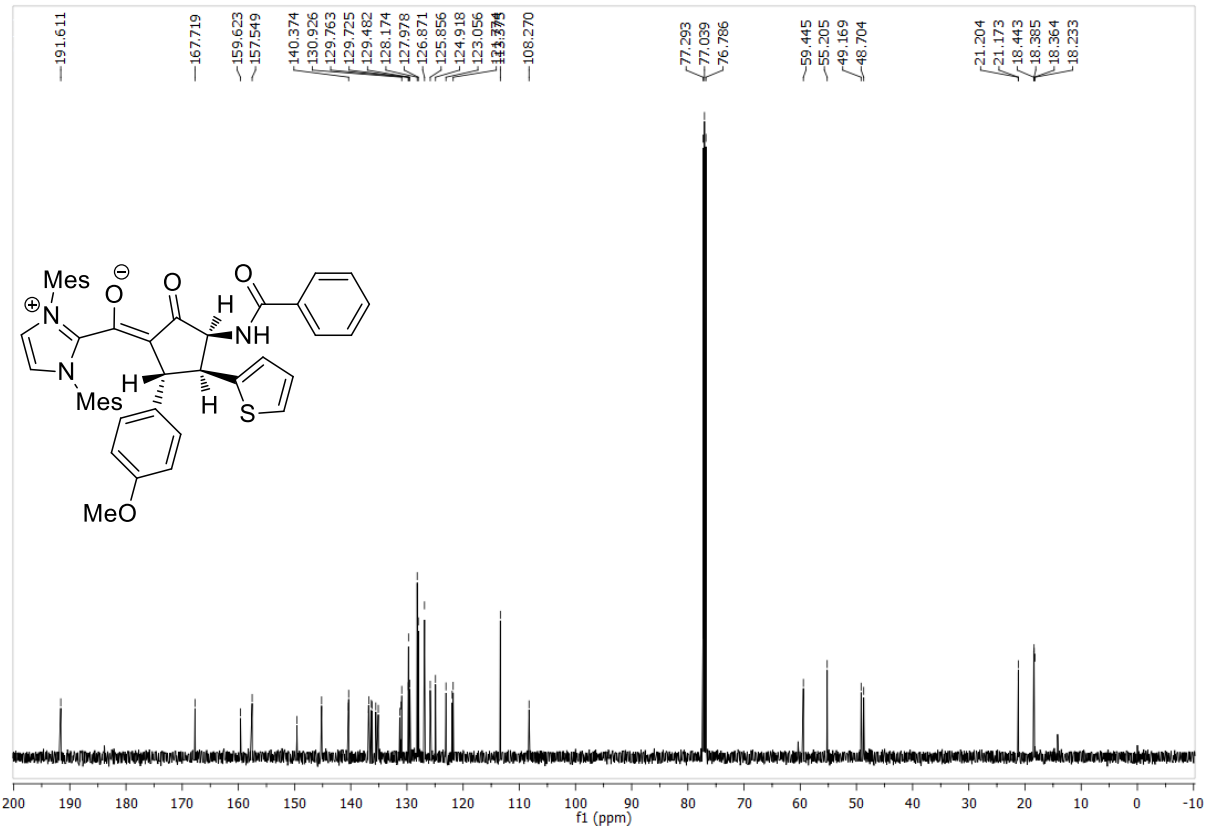
4g'. (Z)-(3-benzamido-4-(furan-2-yl)-5-(4-methoxyphenyl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



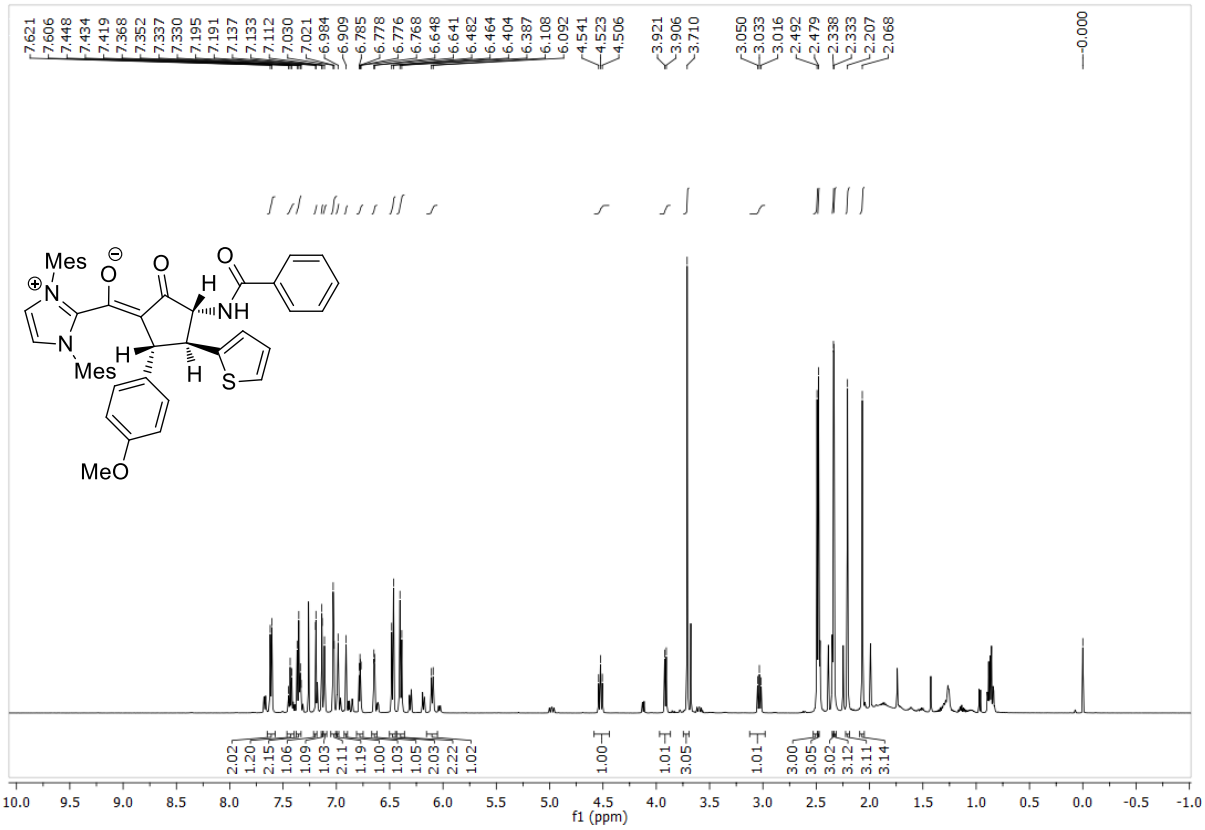


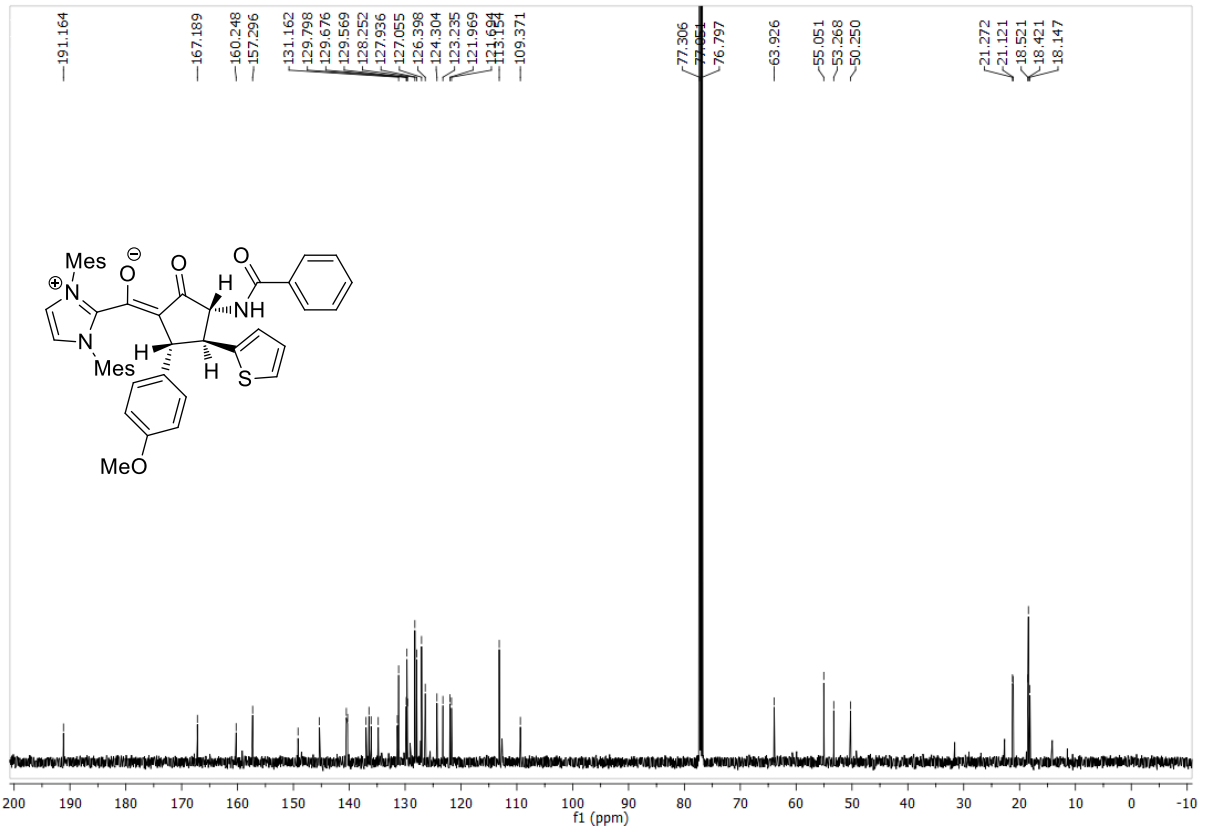
4h. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



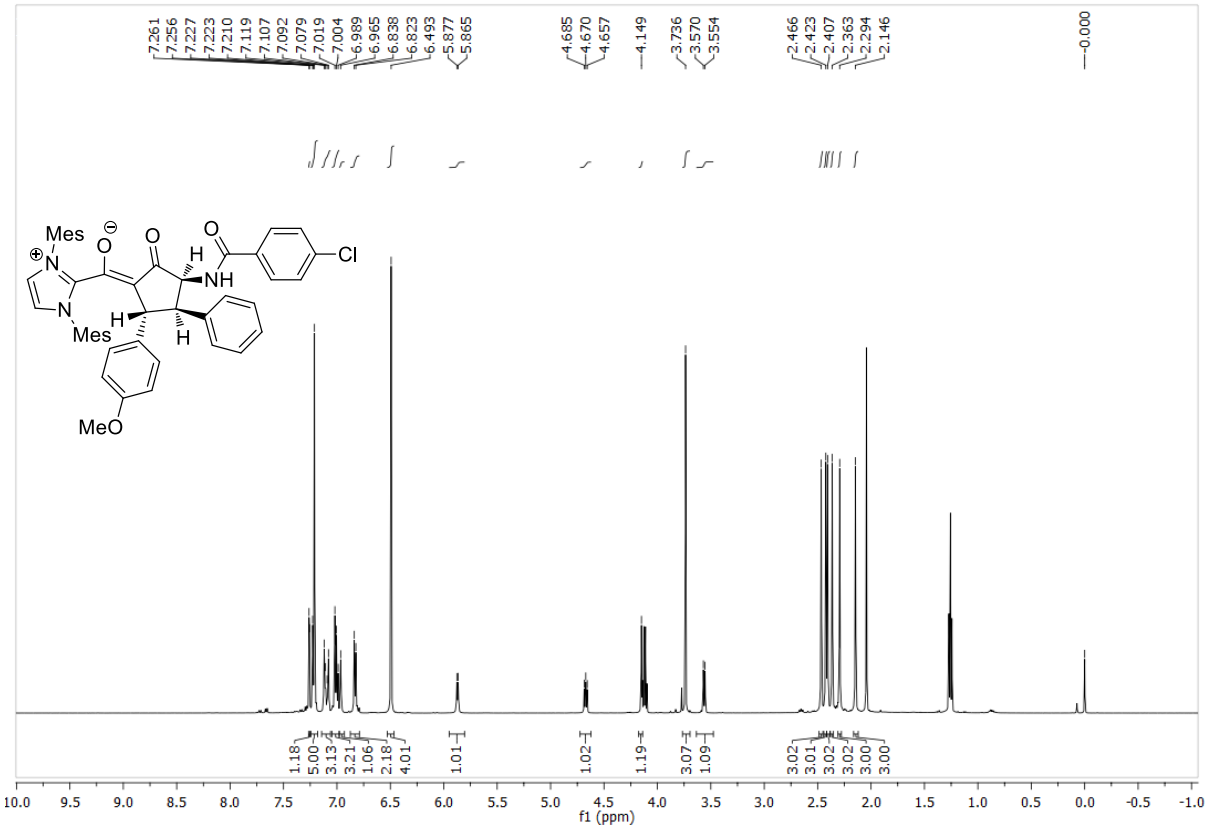


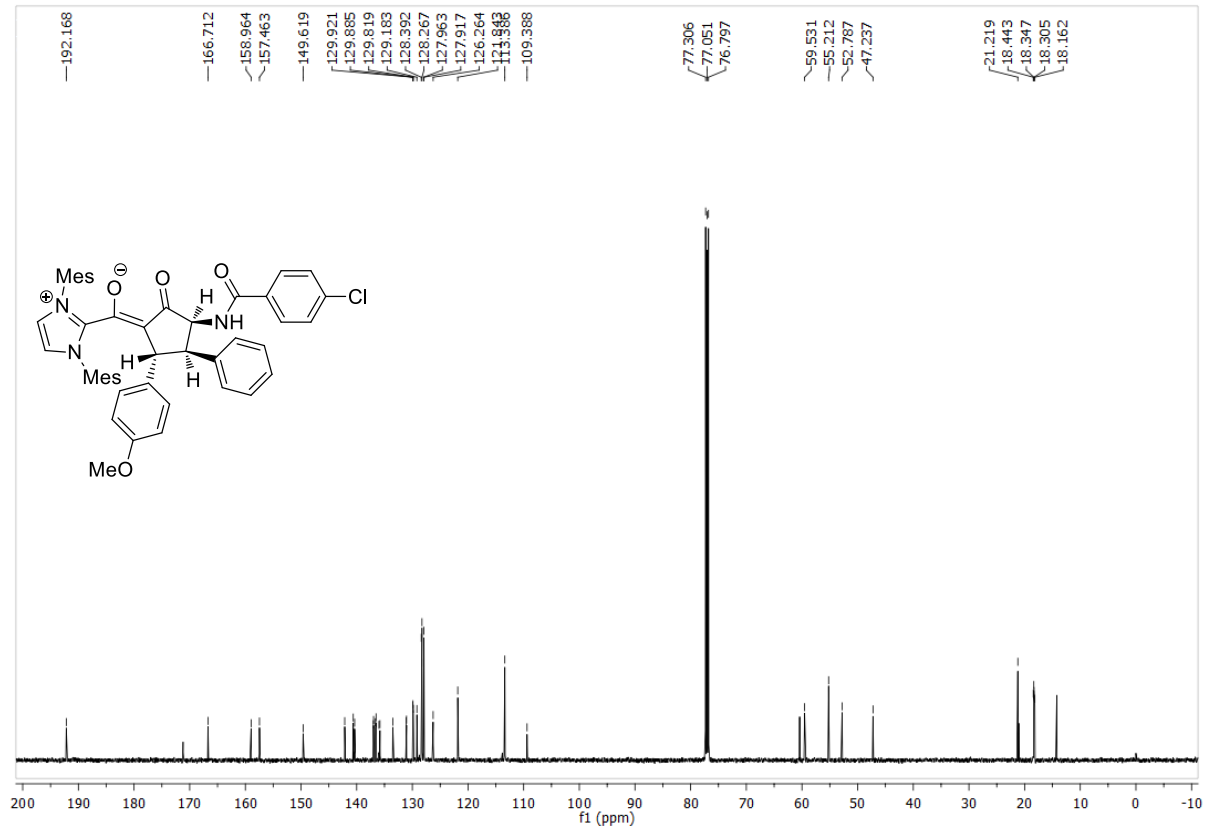
4h’. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



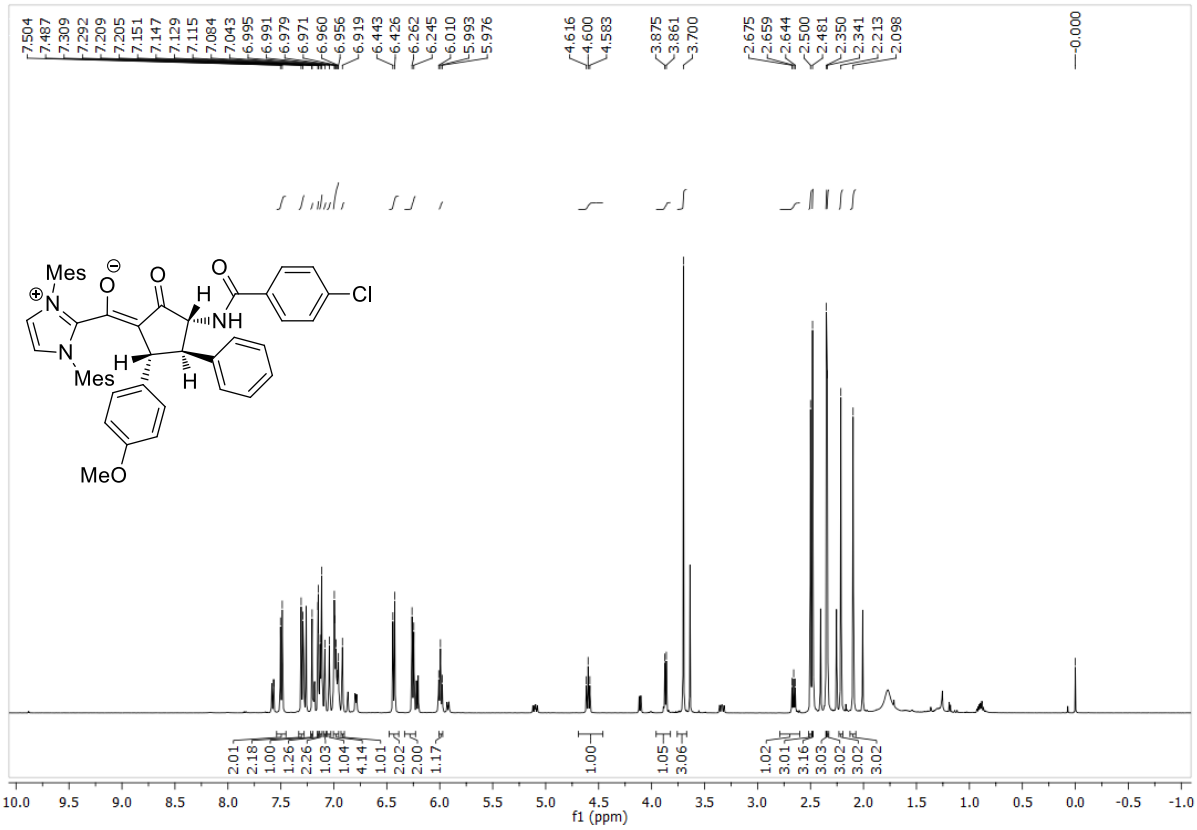


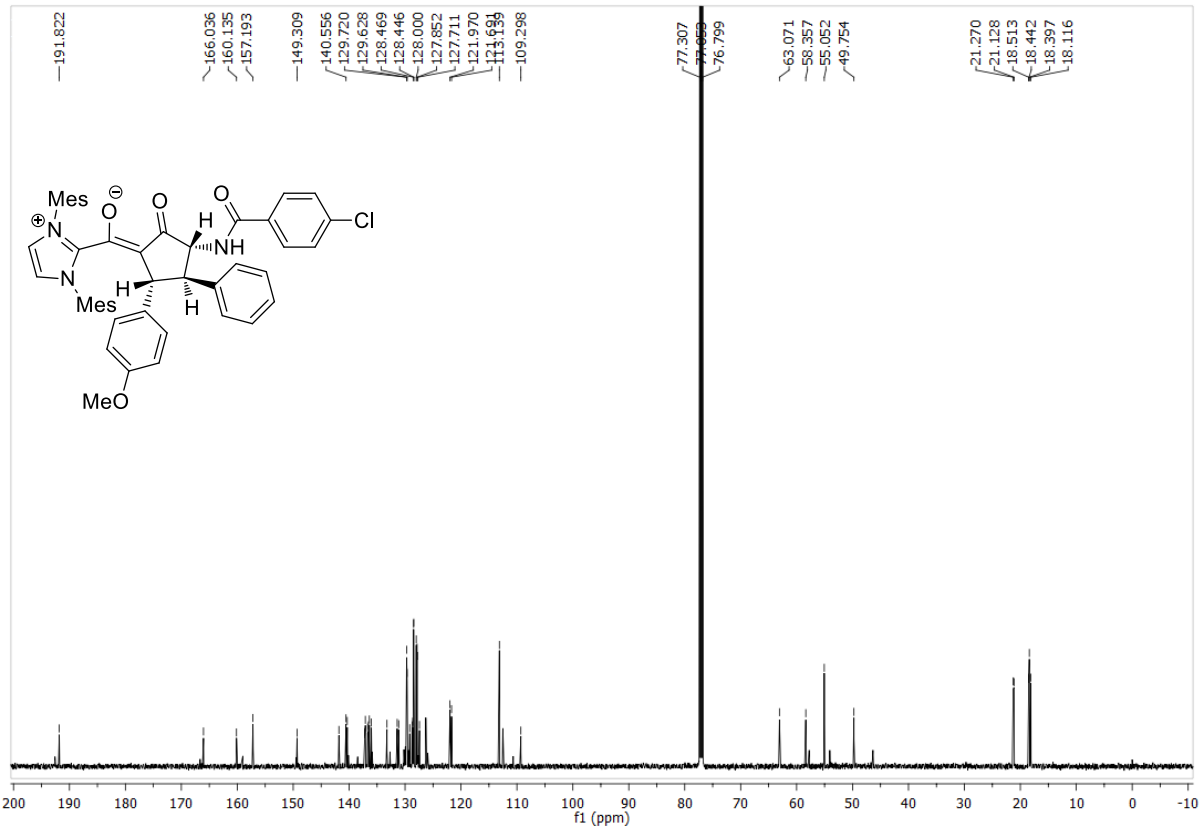
4i. (Z)-(3-(4-chlorobenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



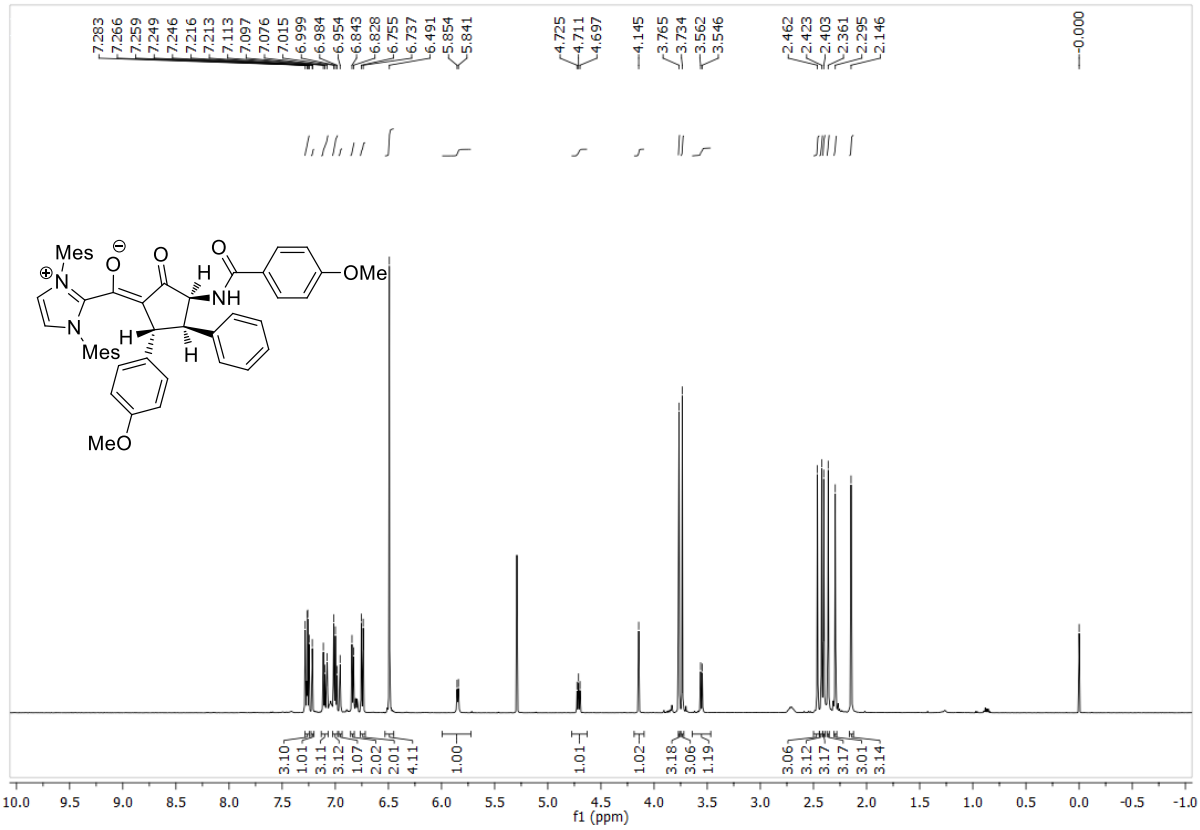


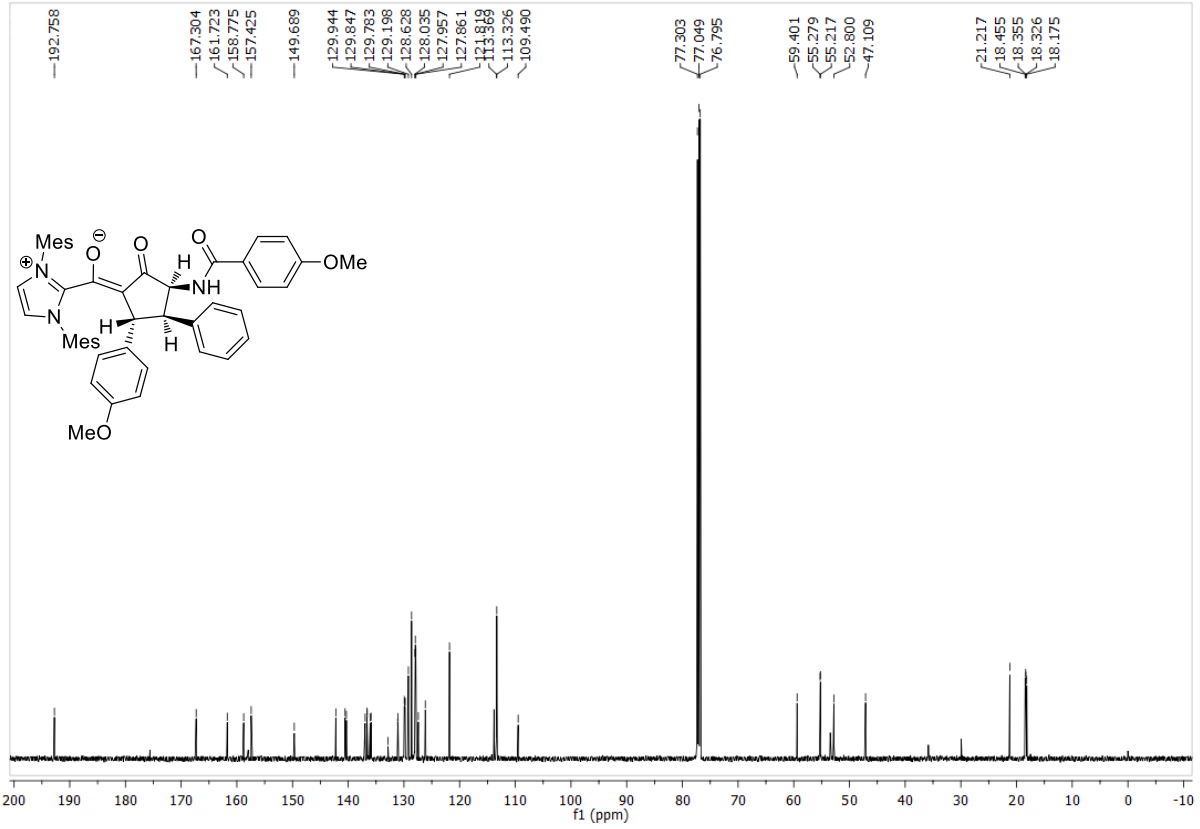
4i'. (Z)-(3-(4-chlorobenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



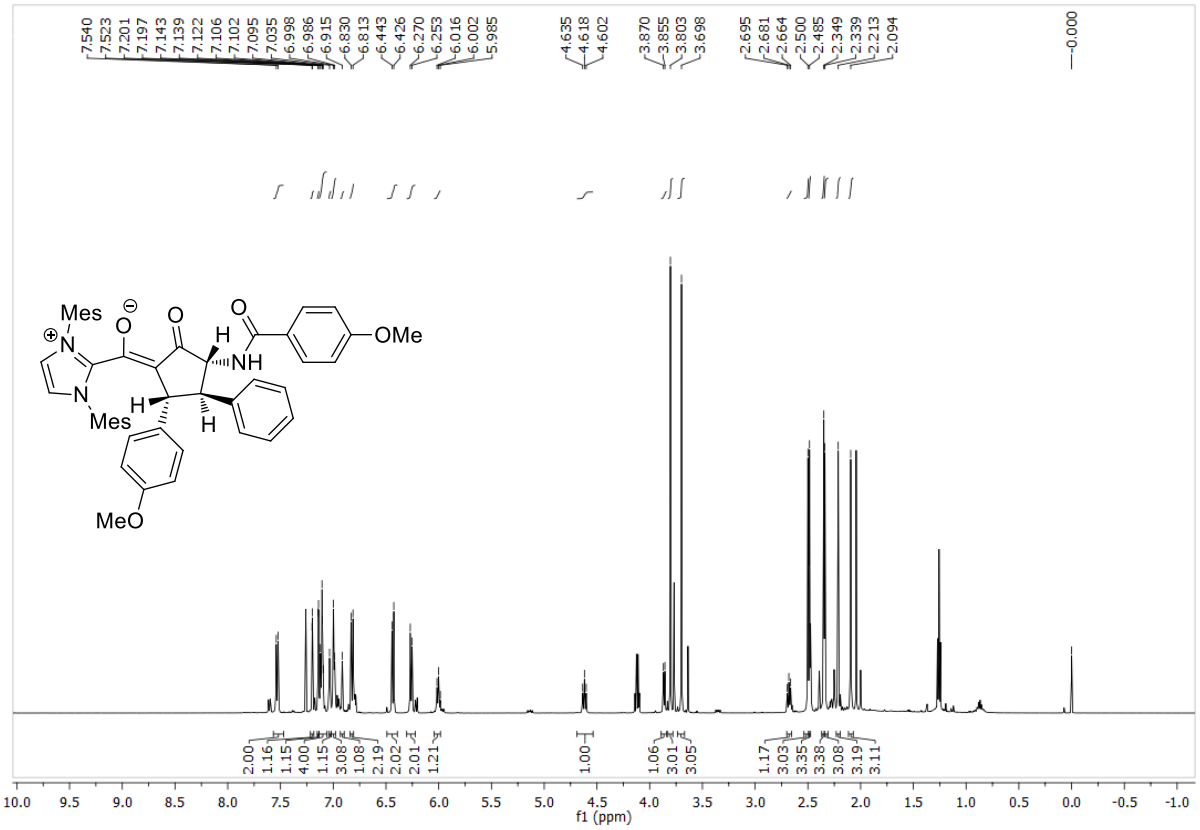


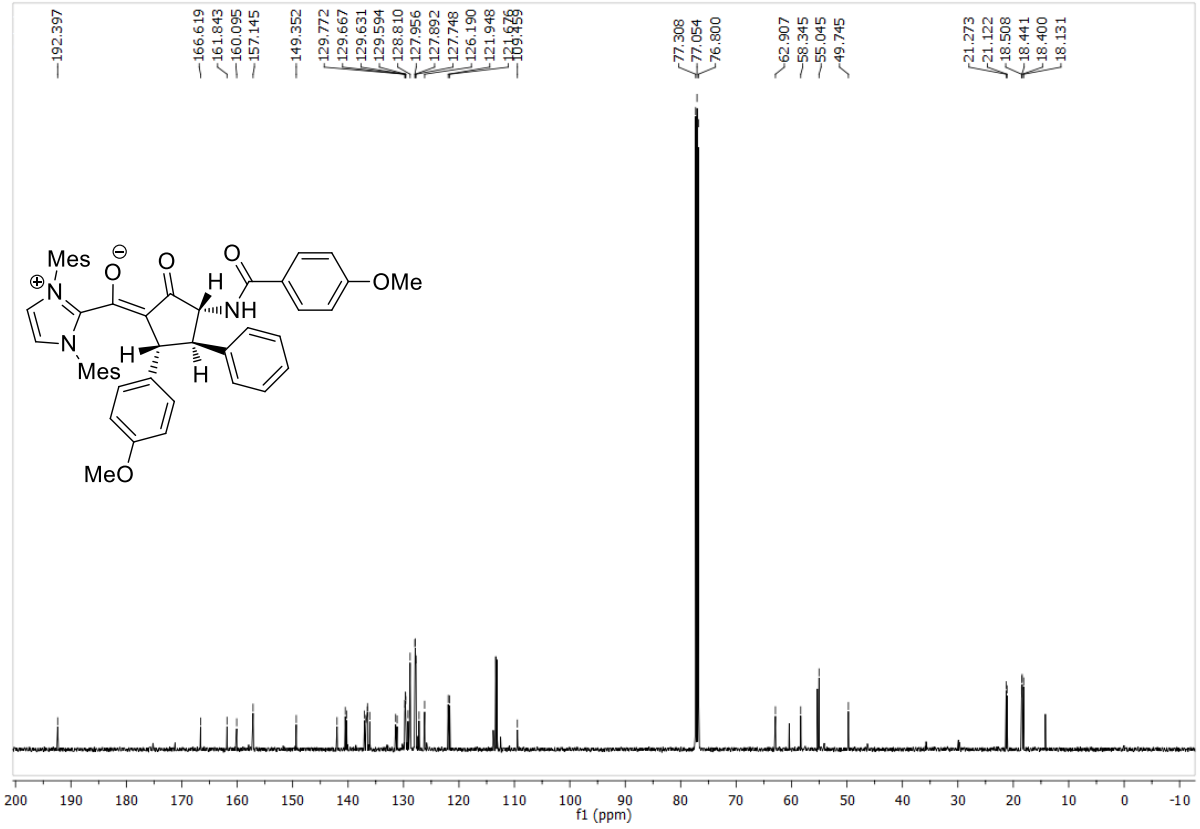
4j. (Z)-(1,3-dimesityl-1H-imidazol-3-ium-2-yl)(3-(4-methoxybenzamido)-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)methanolate



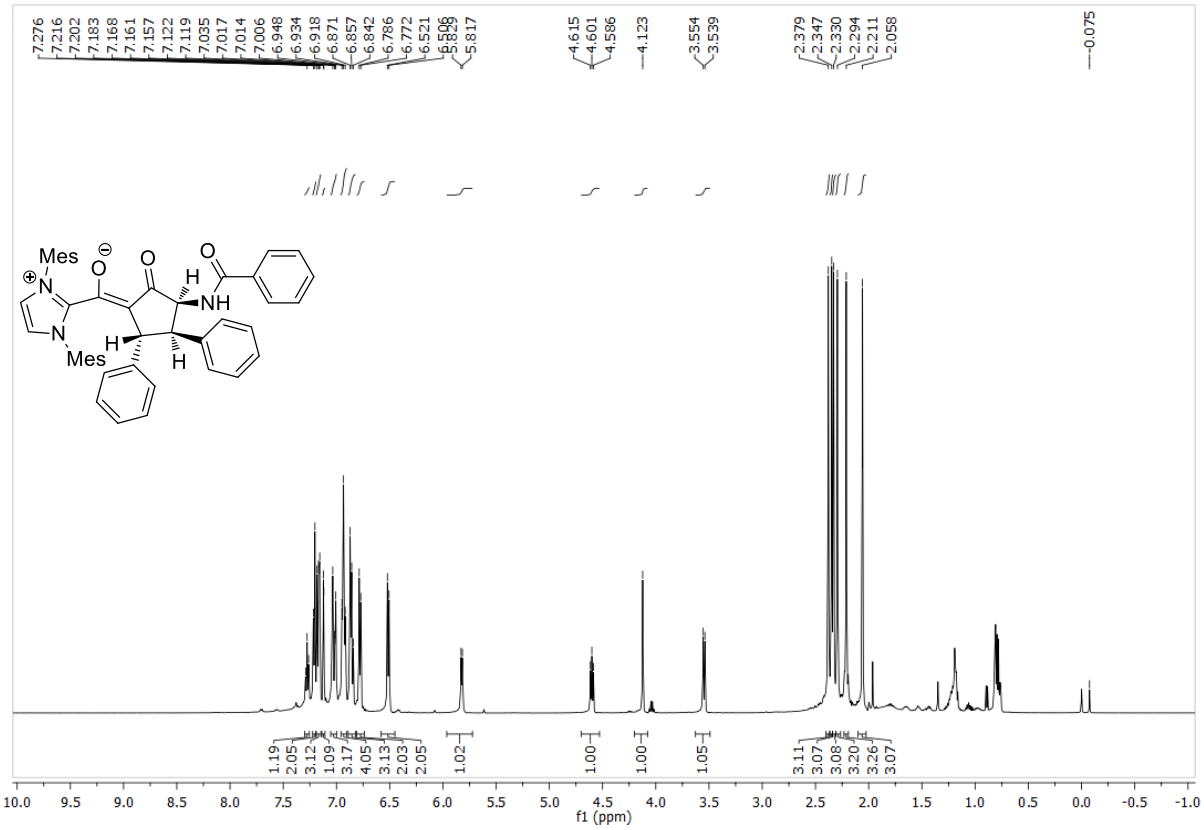


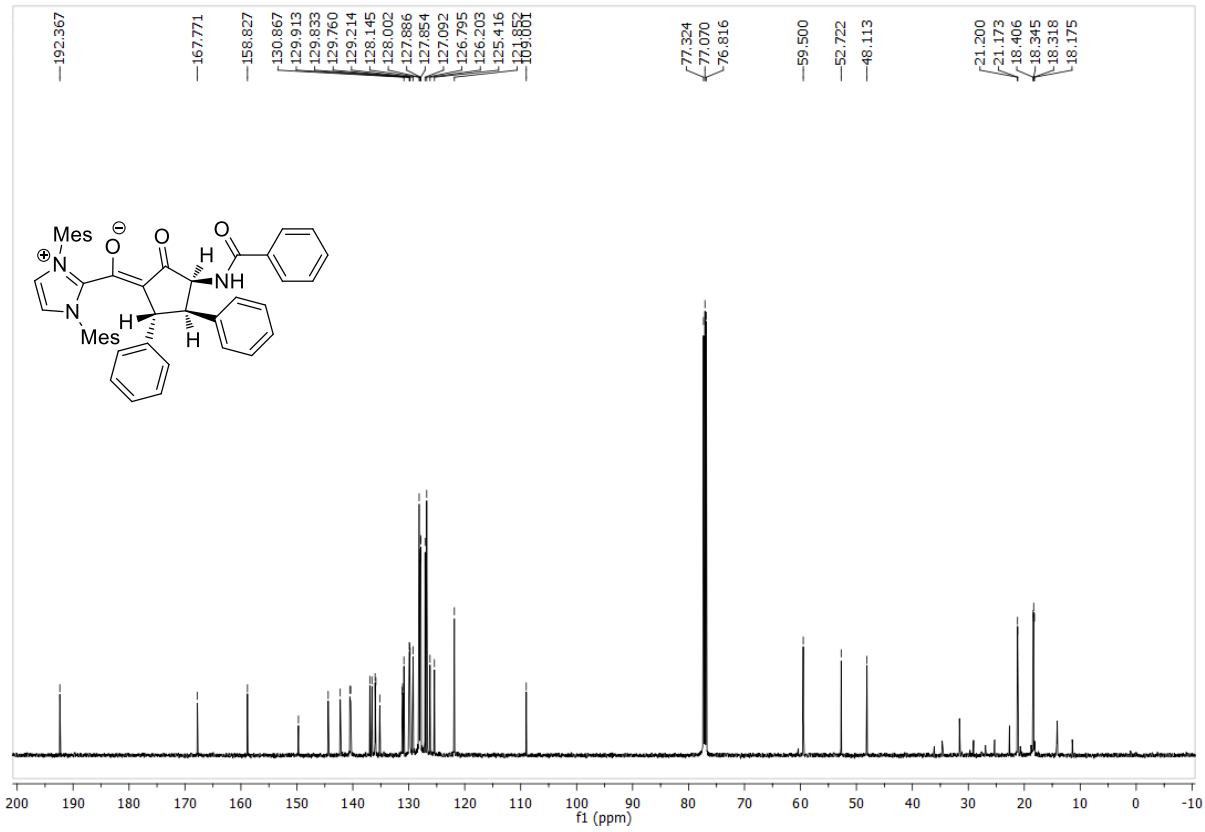
4j'. (Z)-(1,3-dimesityl-1H-imidazol-3-ium-2-yl)(3-(4-methoxybenzamido)-5-(4-methoxy phenyl)-2-oxo-4-phenylcyclopentylidene)methanolate



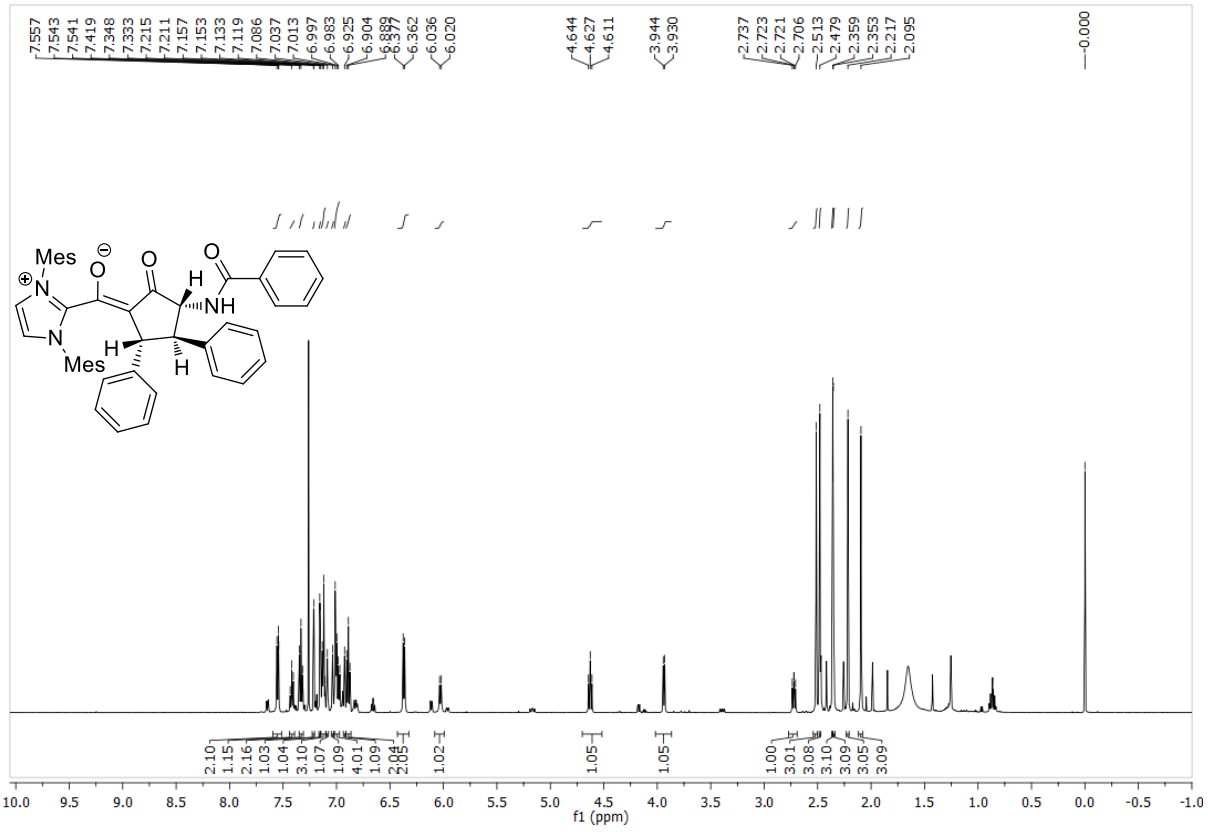


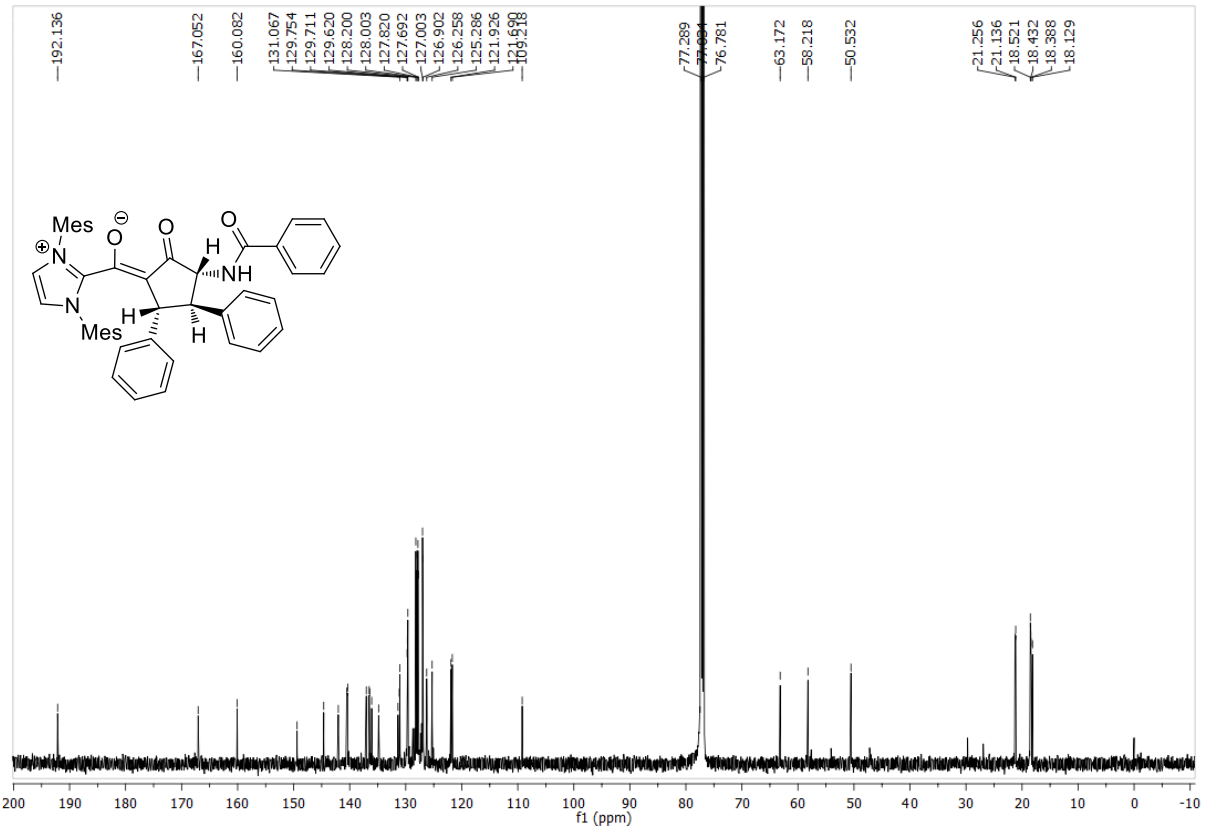
4k. (Z)-(3-benzamido-2-oxo-4,5-diphenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



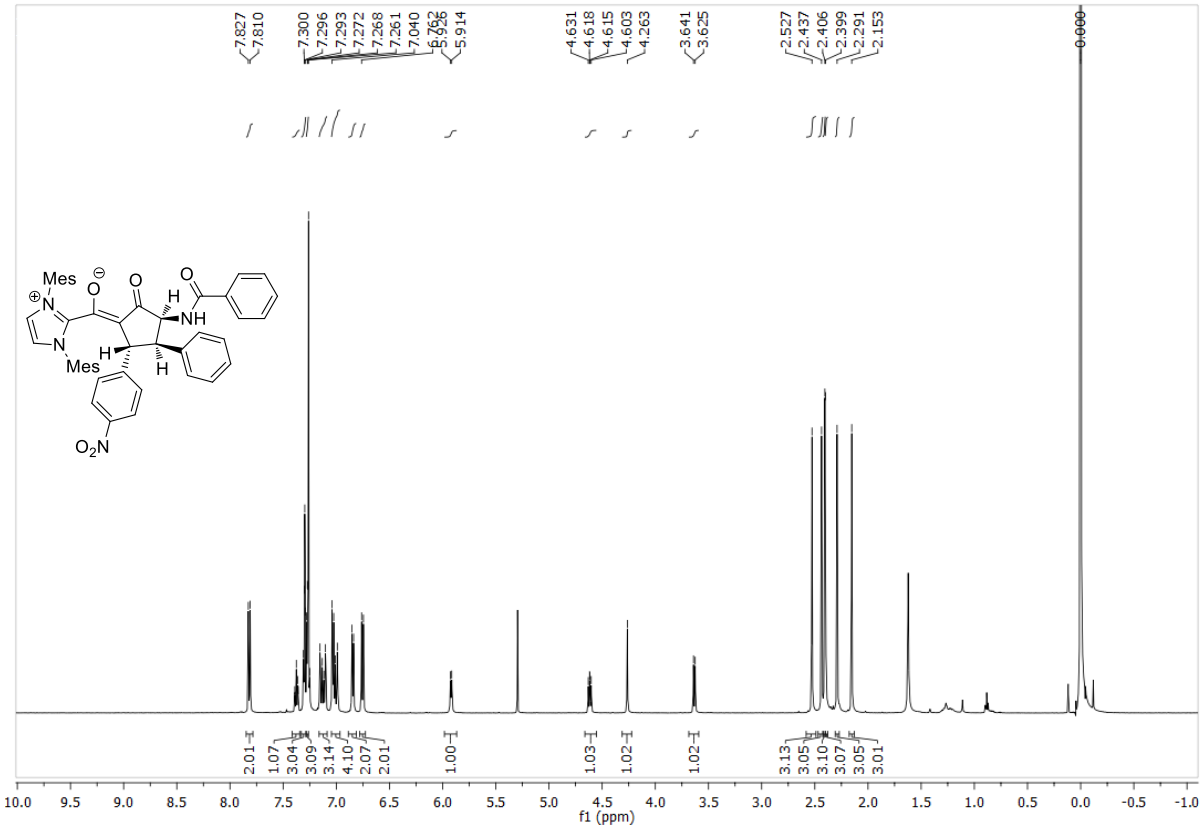


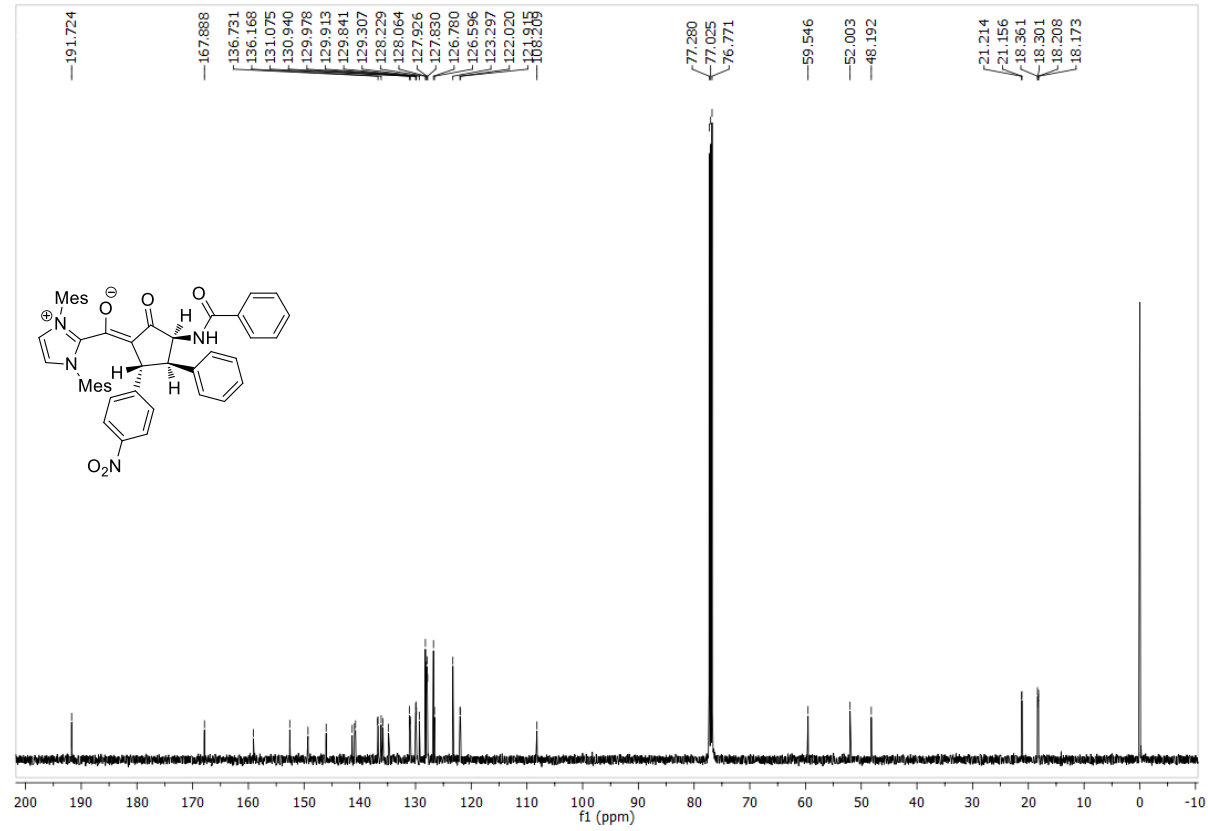
4k’. (Z)-(3-benzamido-2-oxo-4,5-diphenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



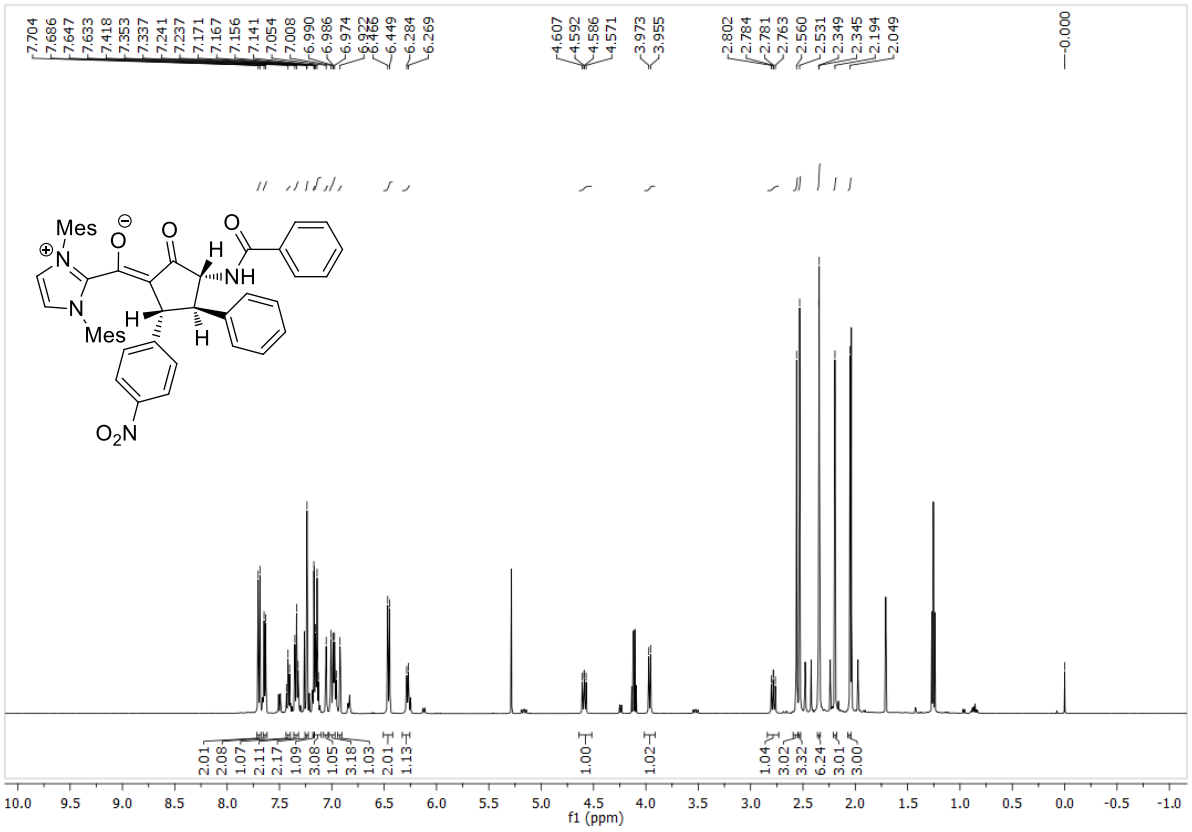


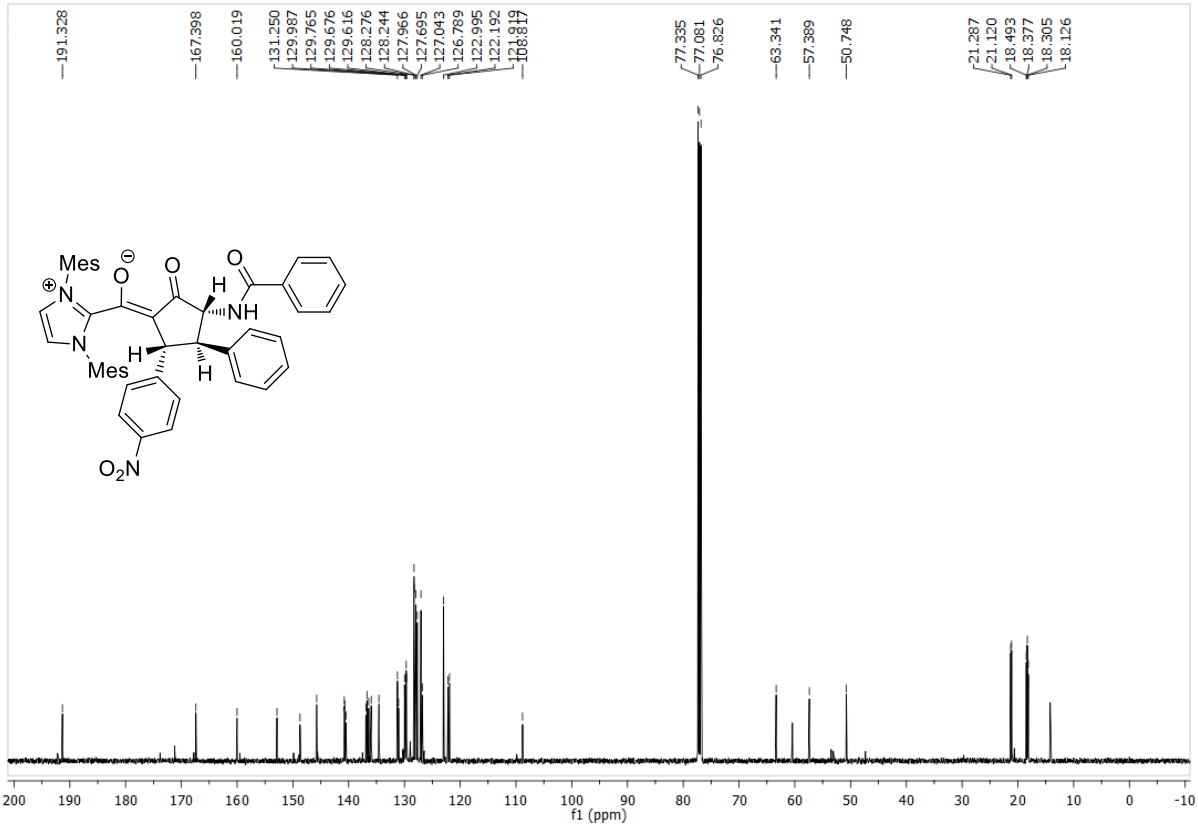
4l. (Z)-(-3-benzamido-5-(4-nitrophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



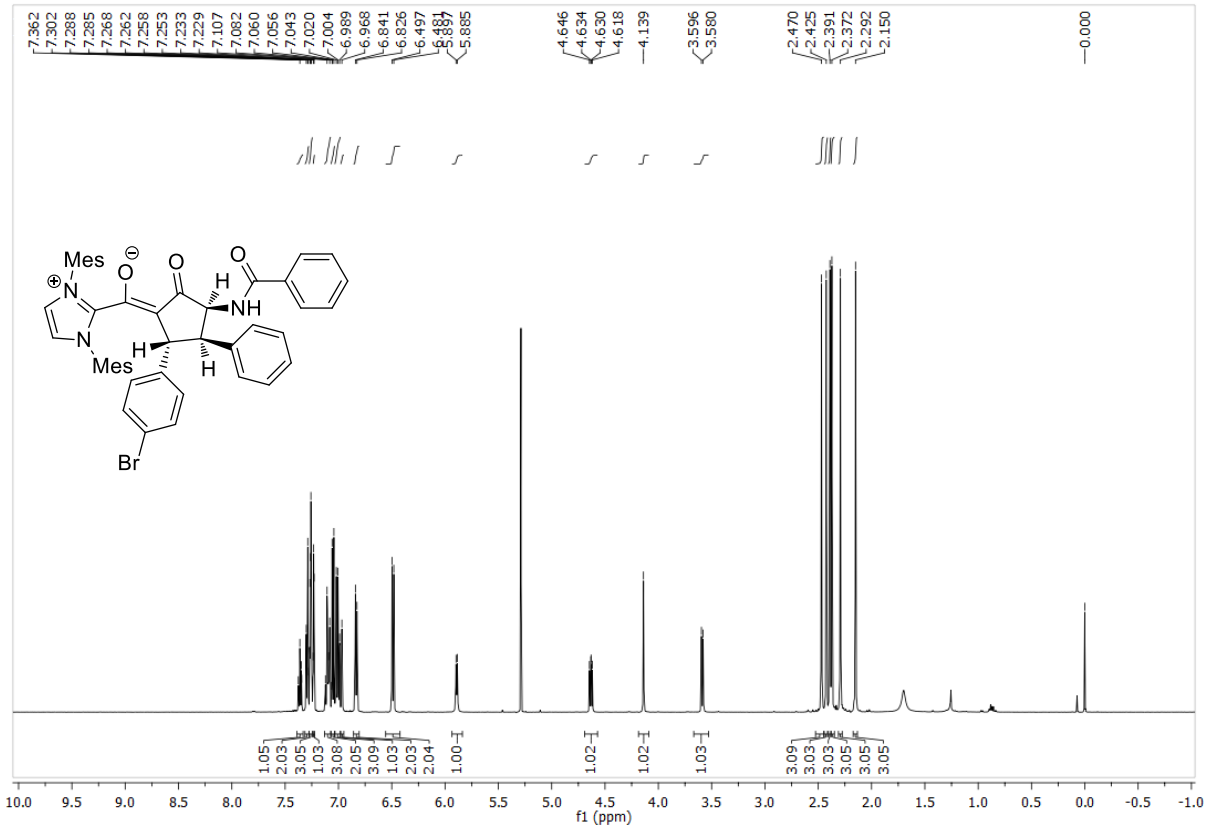


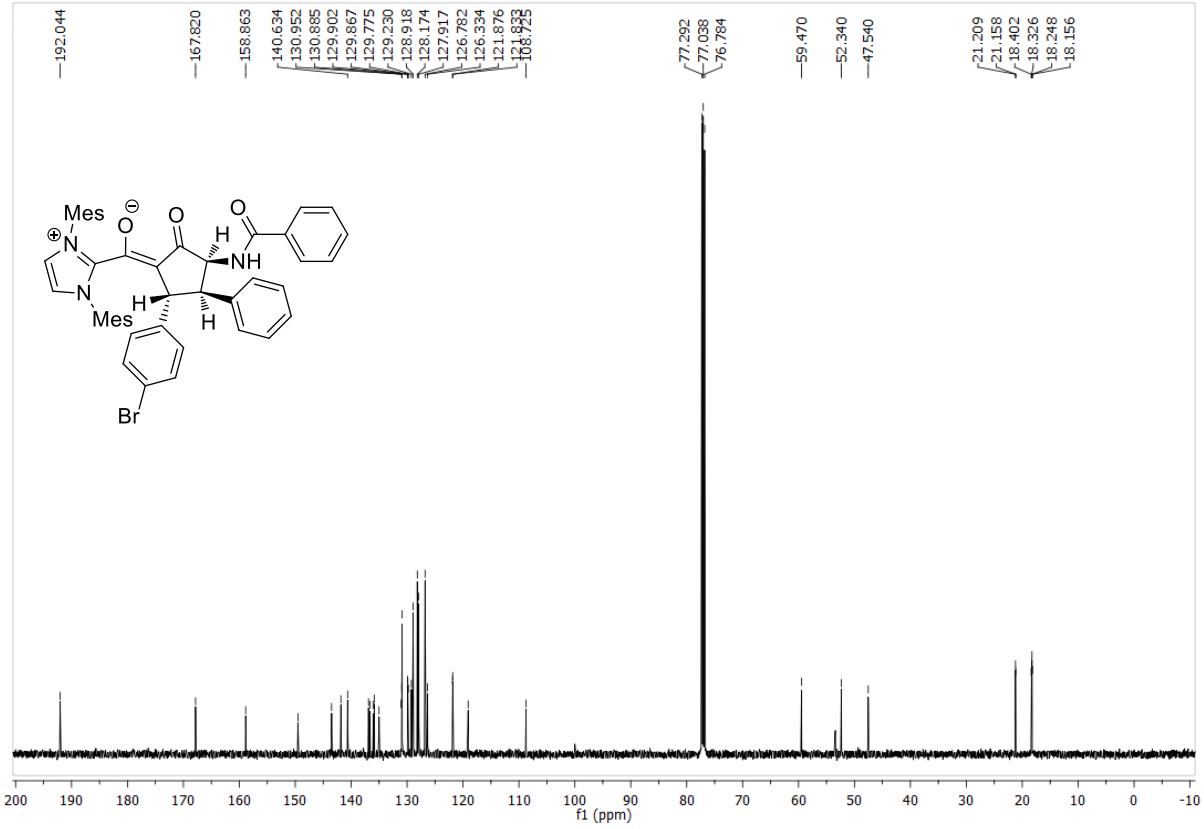
4l’. (Z)-(3-benzamido-5-(4-nitrophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



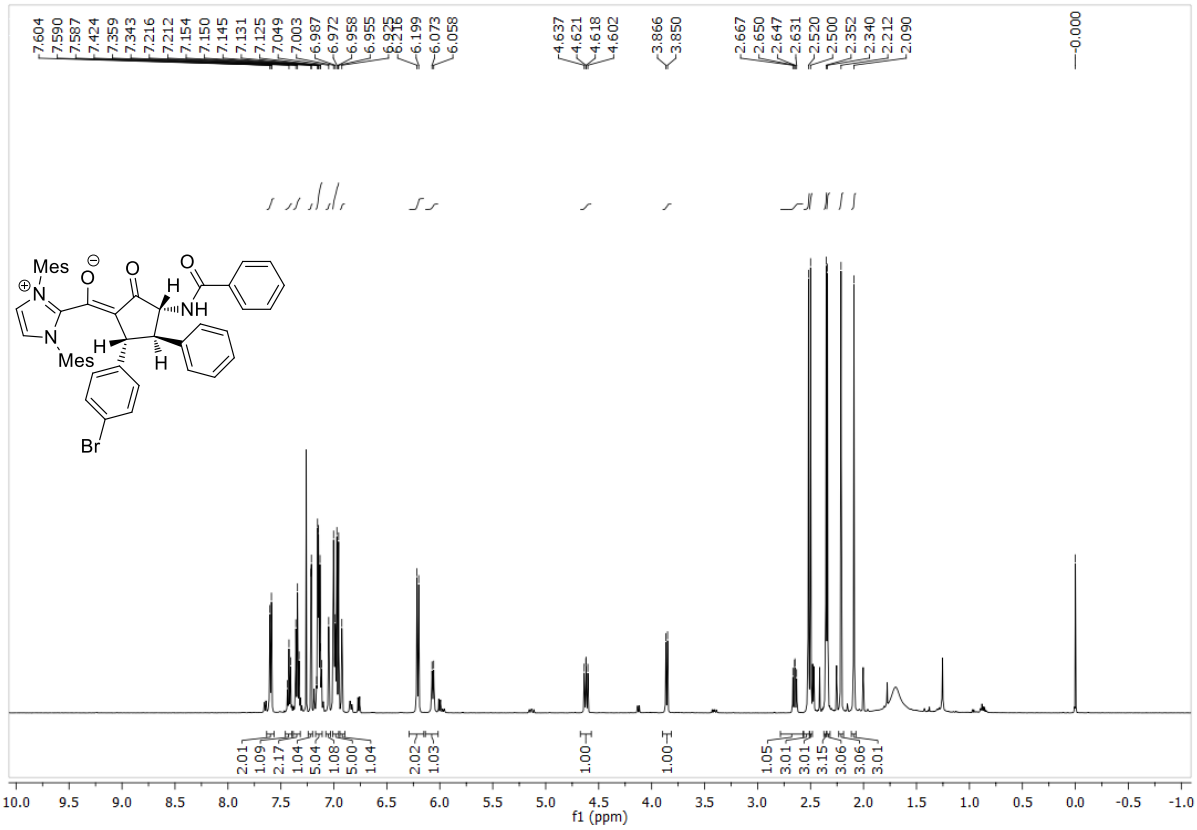


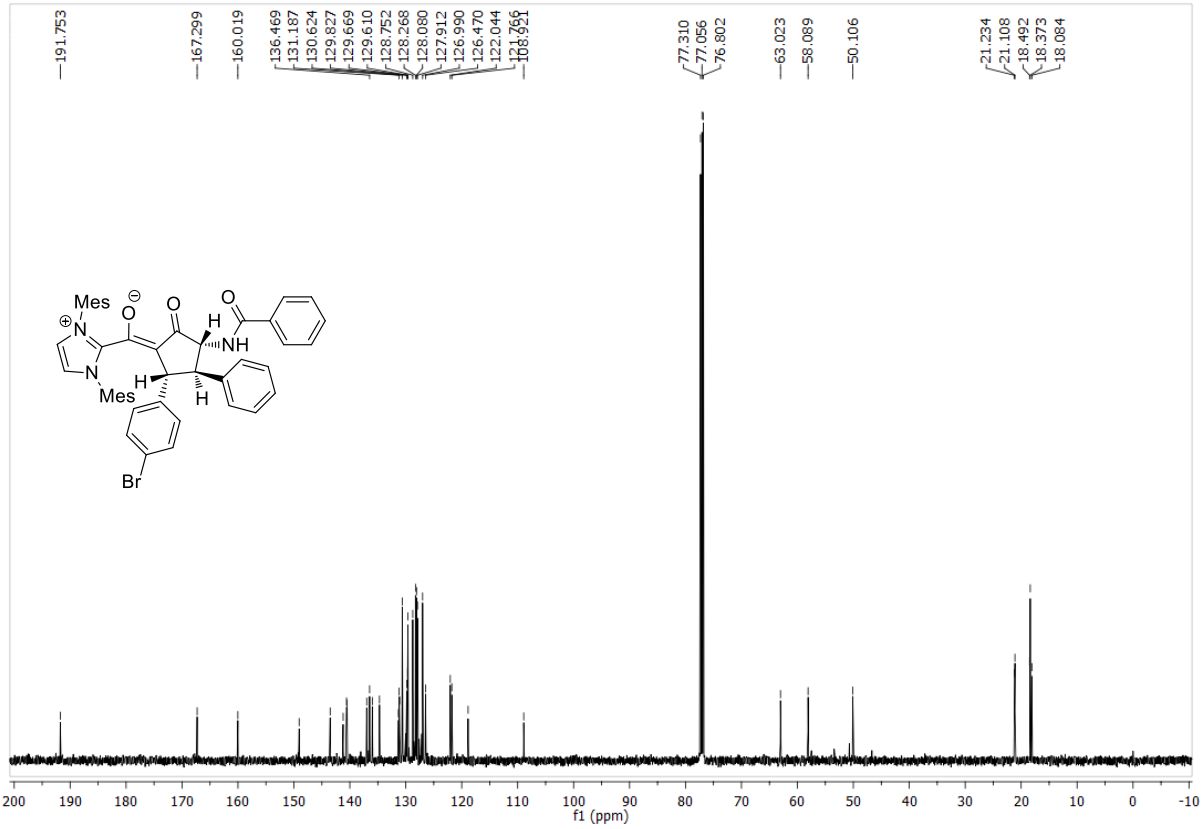
4m. (Z)-(3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



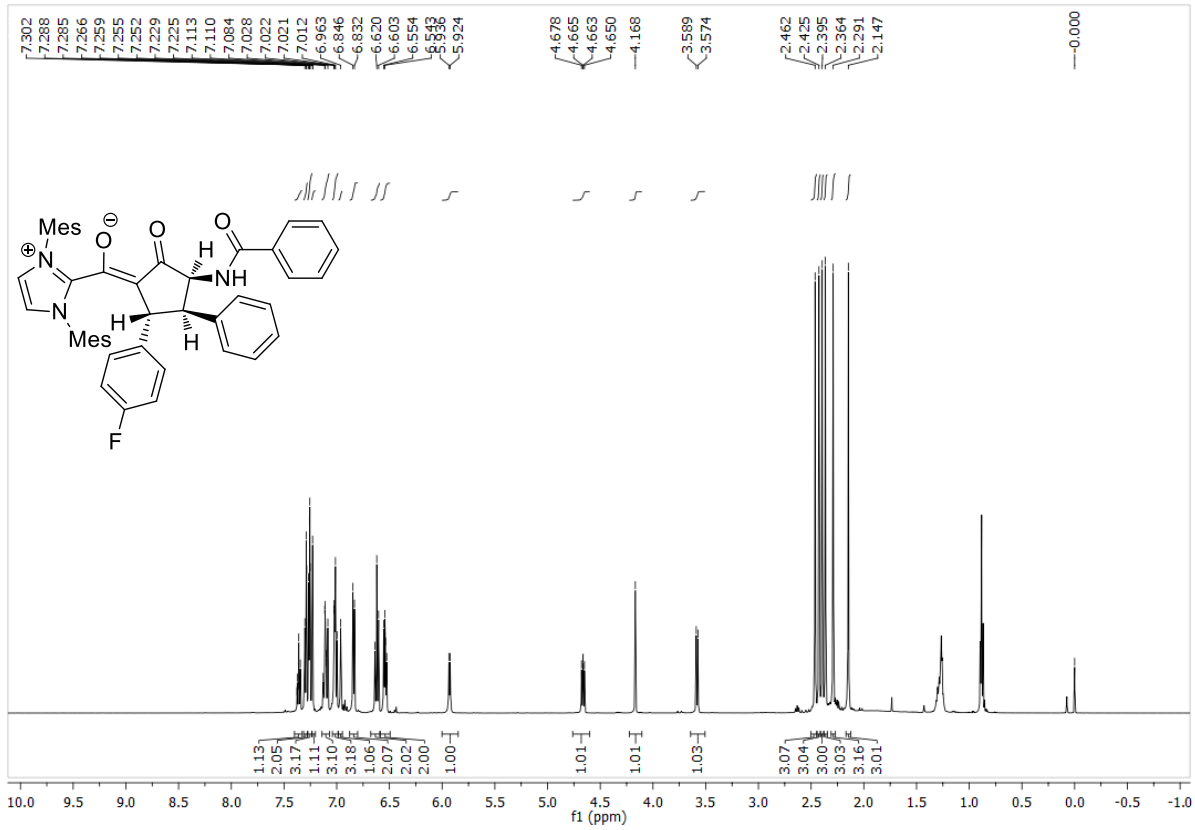


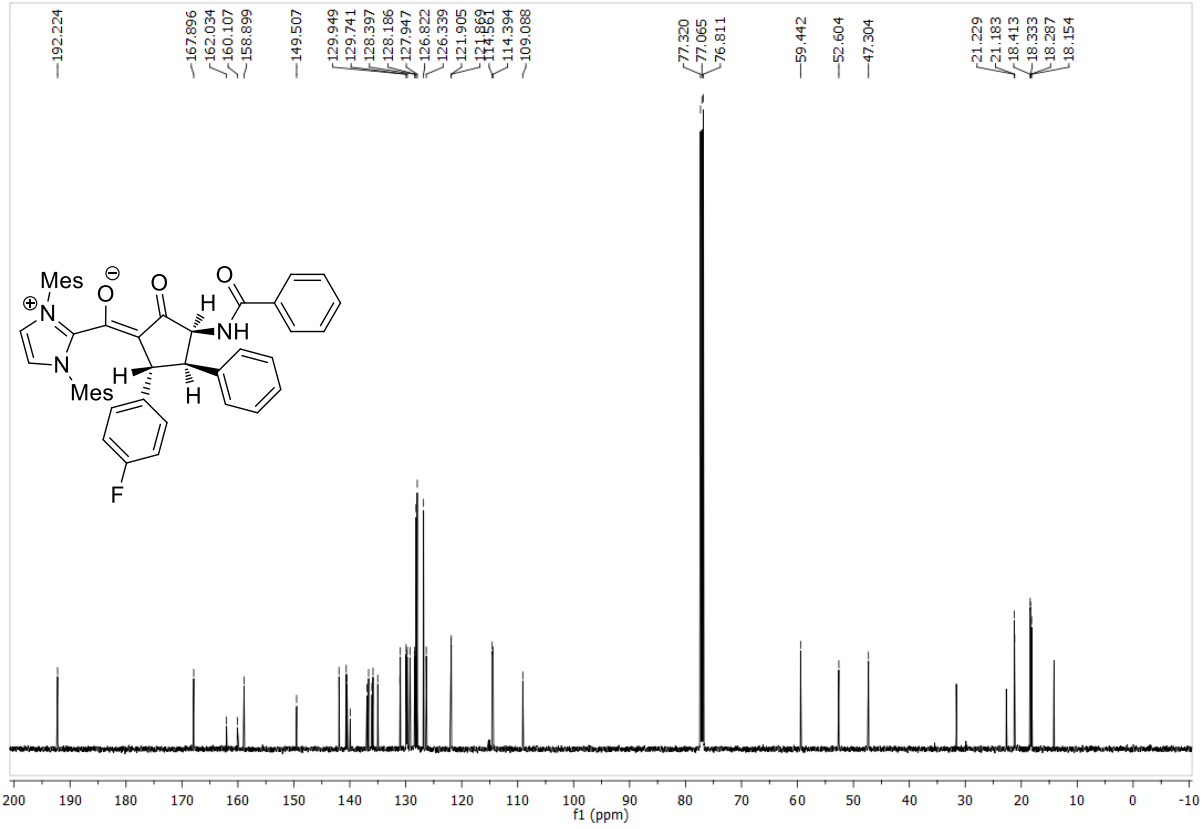
4m’. (Z)-(3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



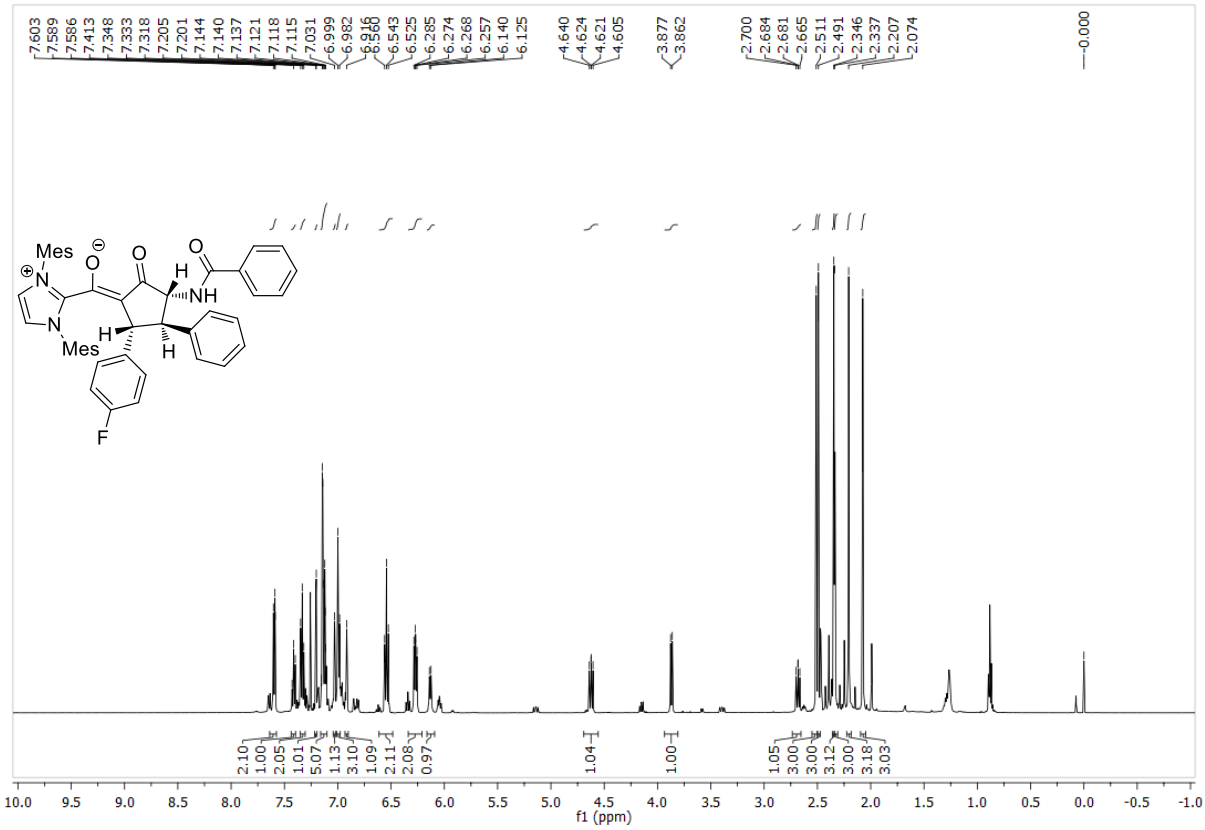


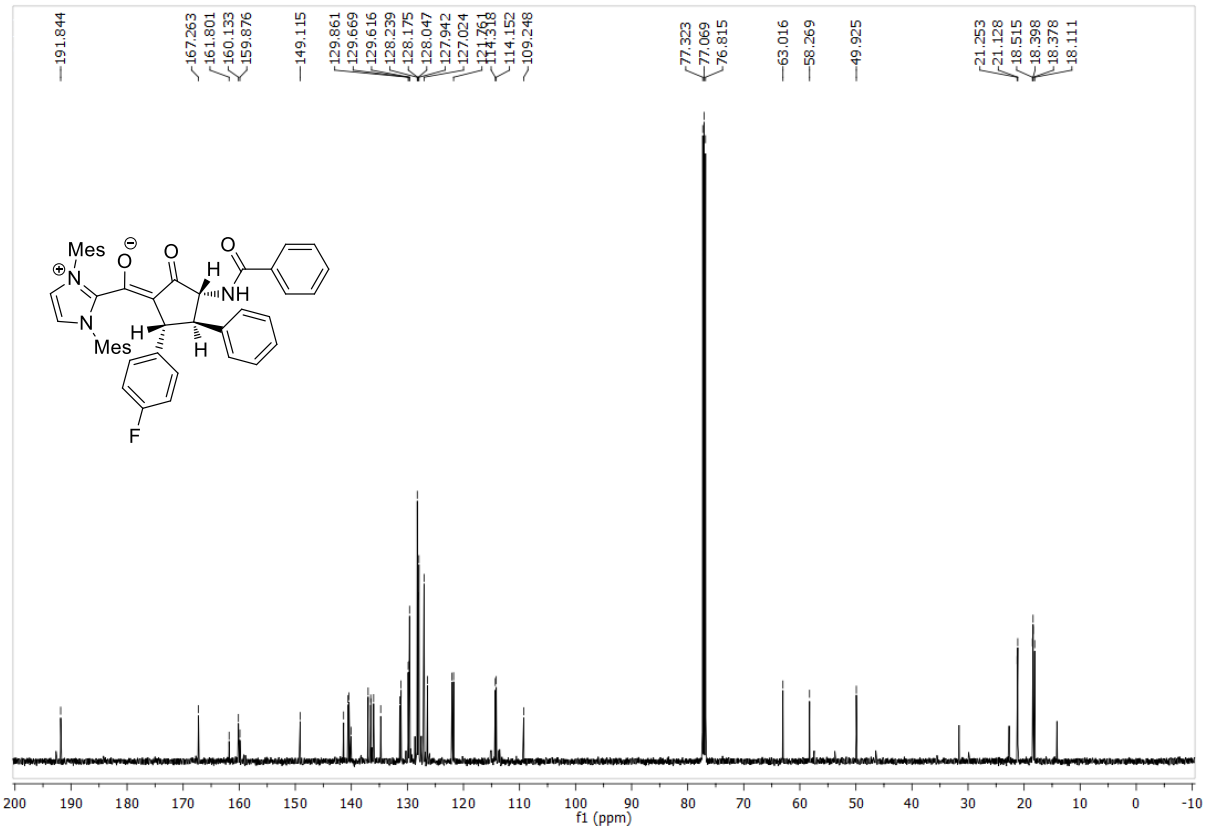
4n. (Z)-(3-benzamido-5-(4-fluorophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



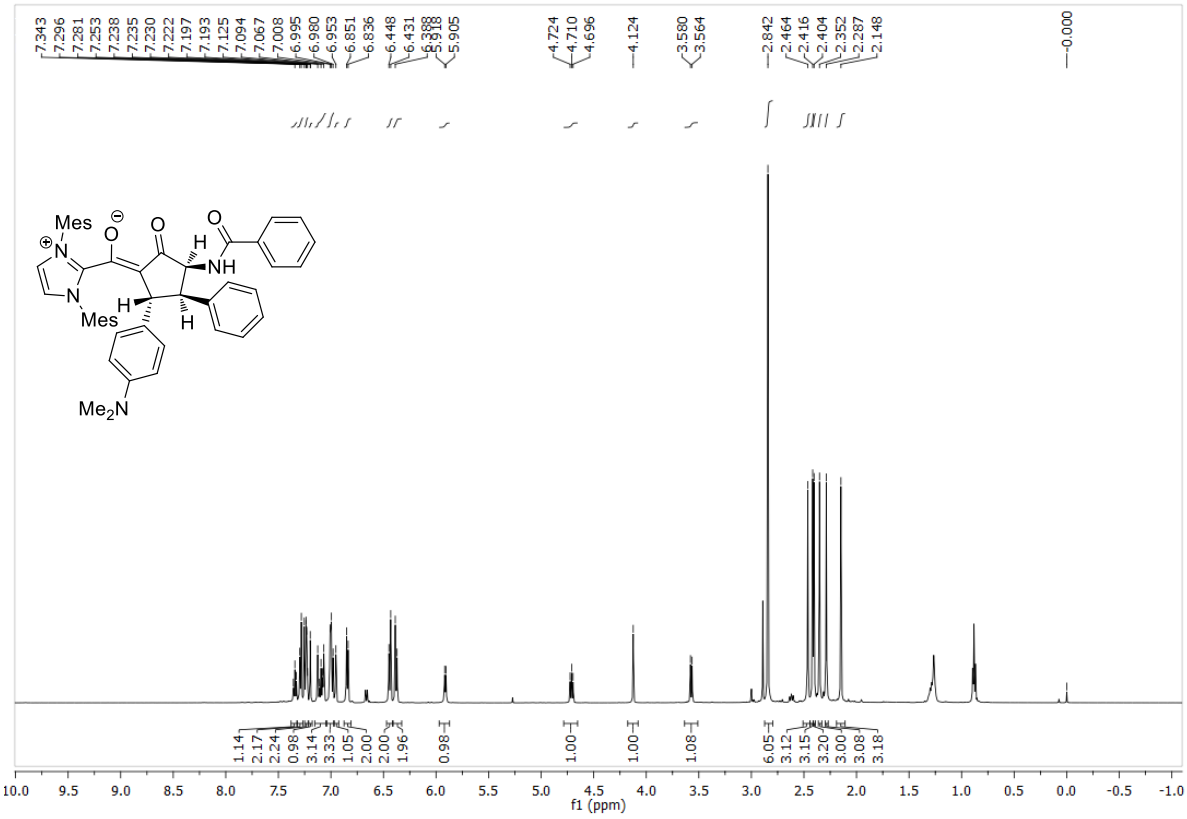


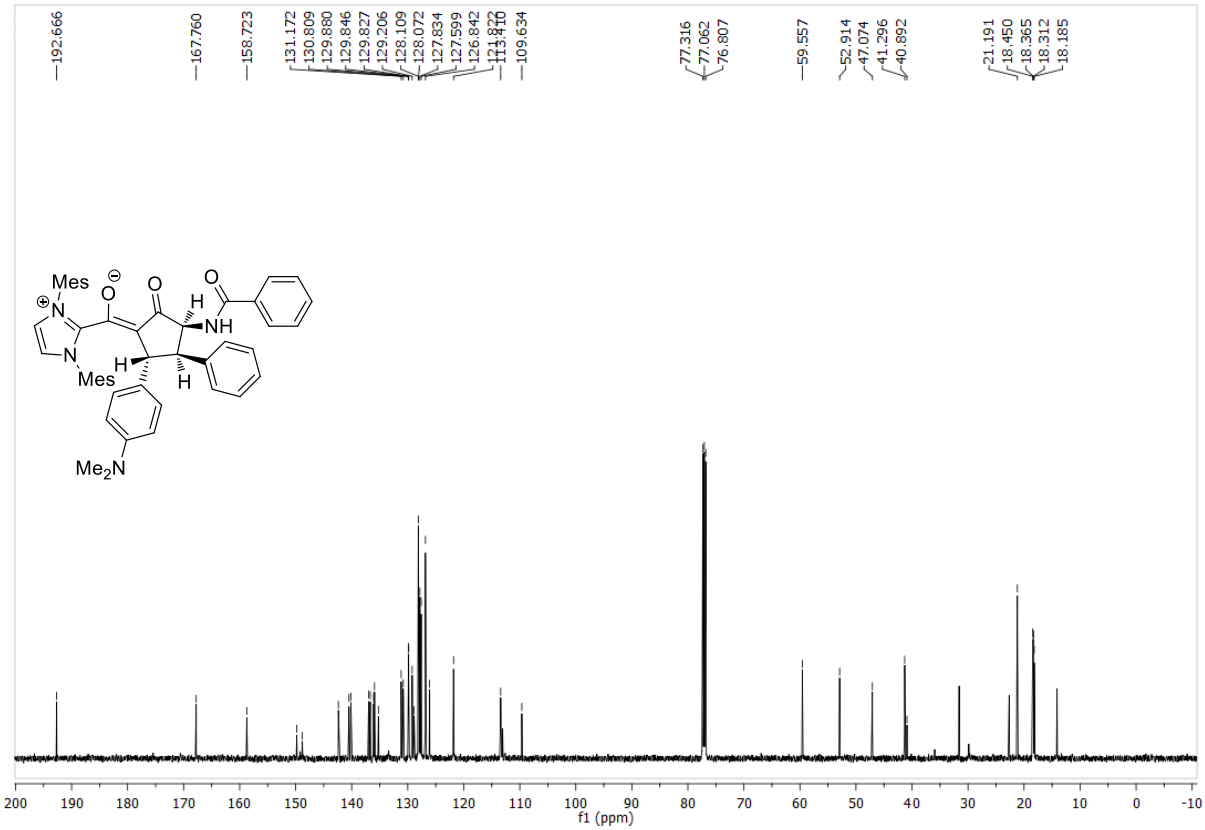
4n’. (Z)-((-3-benzamido-5-(4-bromophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



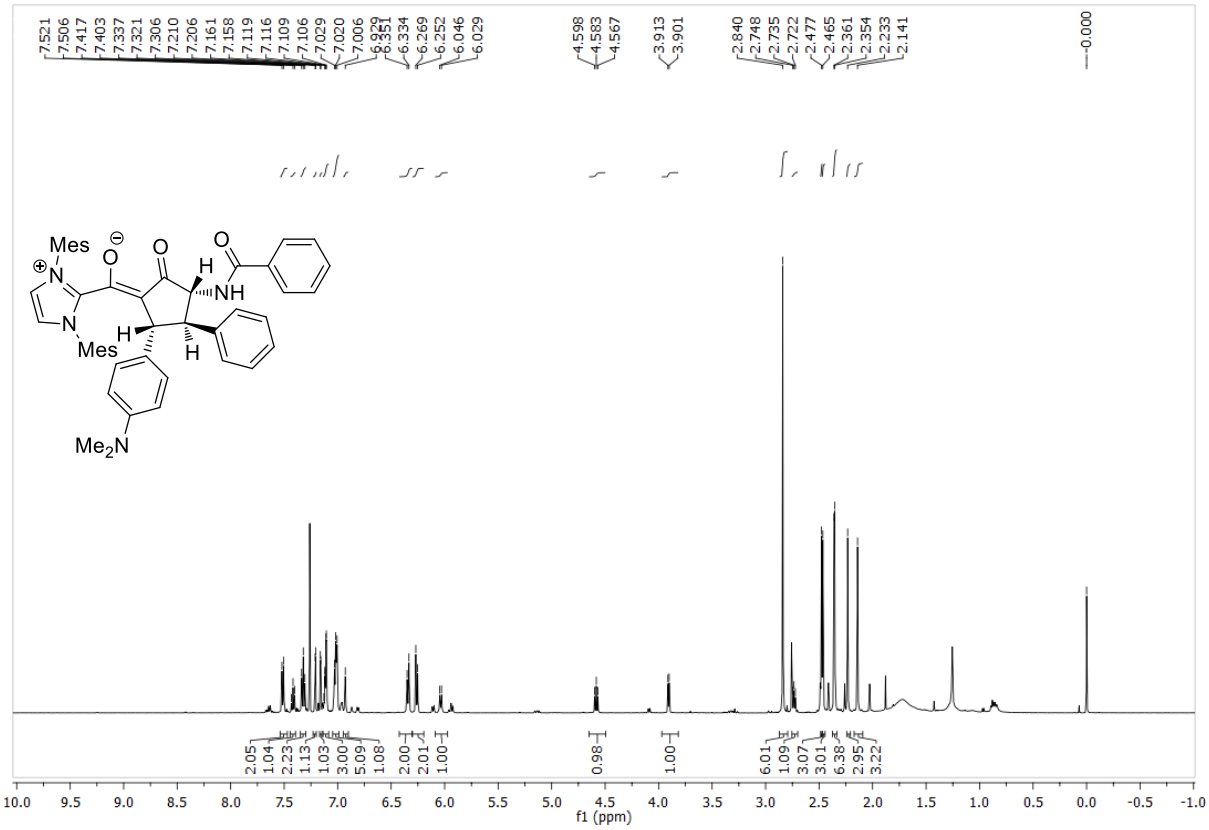


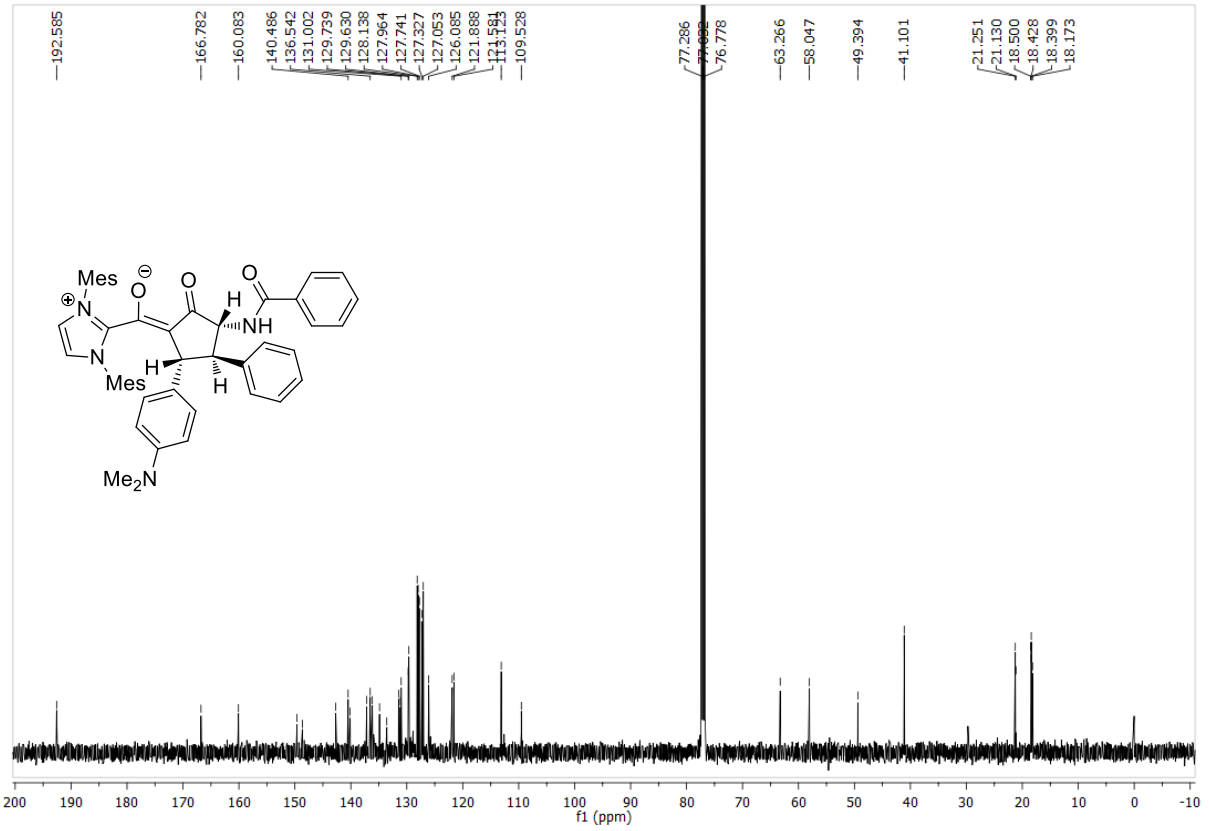
4o. (Z)-(3-benzamido-5-(4-(dimethylamino)phenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



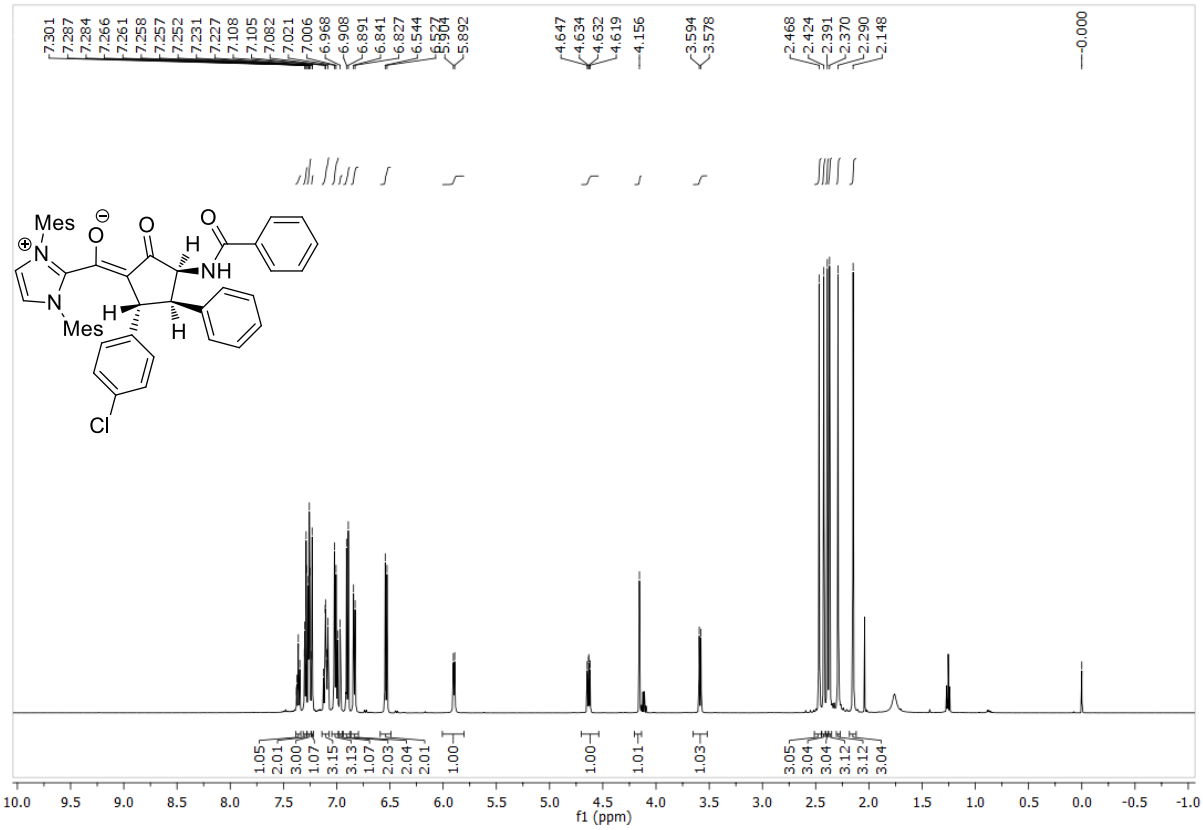


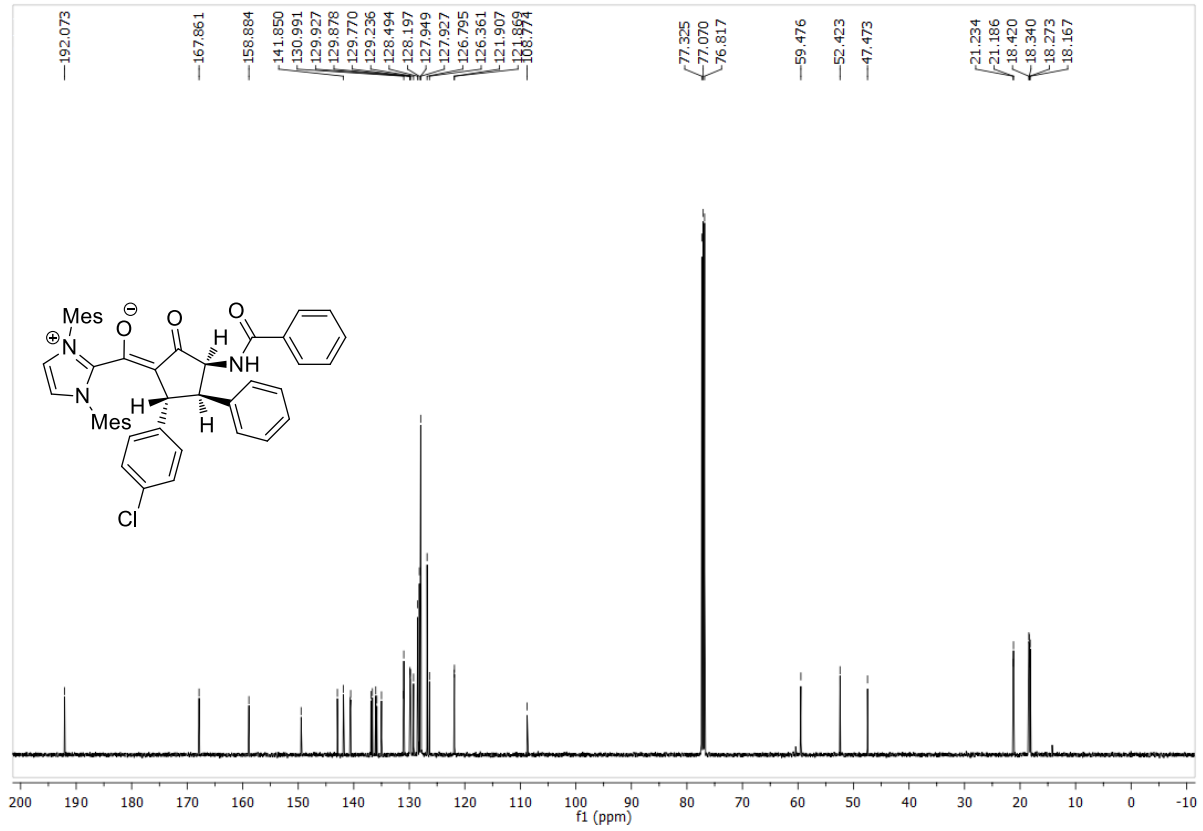
4o'. (Z)-(3-benzamido-5-(4-(dimethylamino)phenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



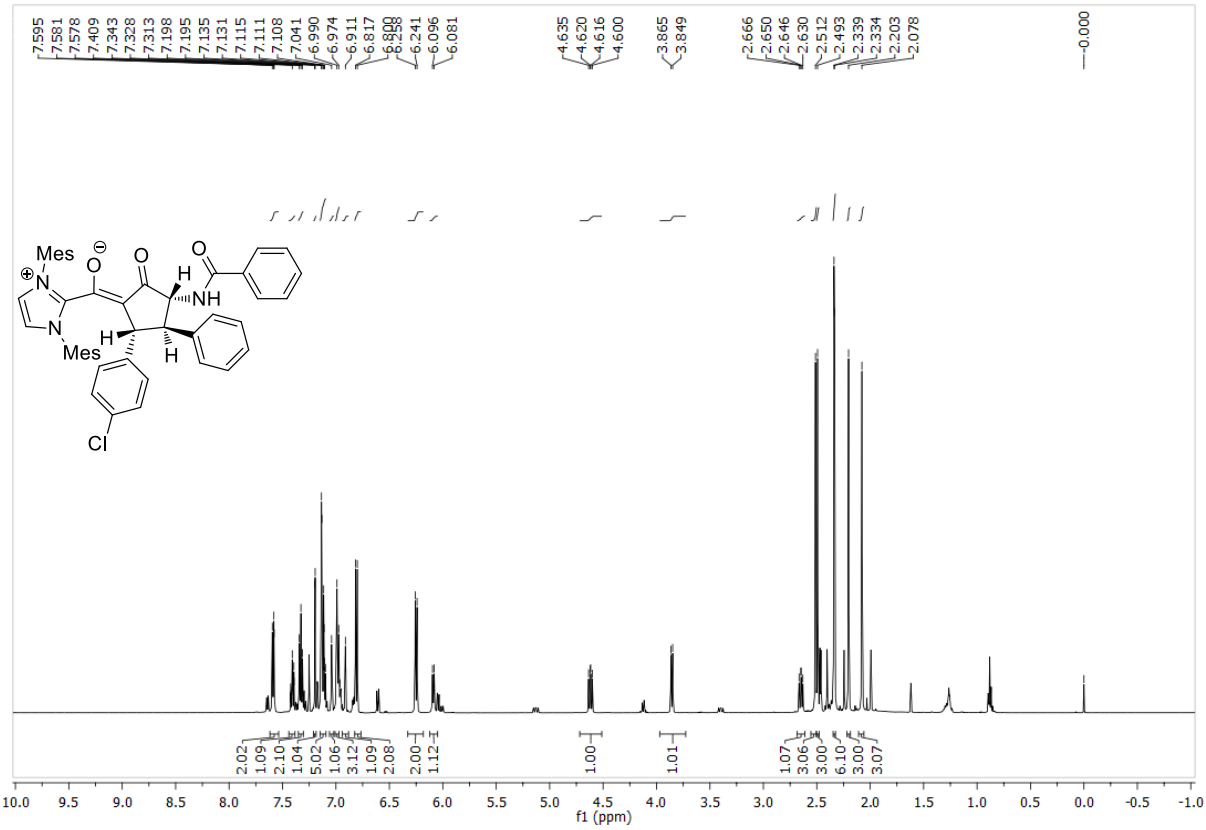


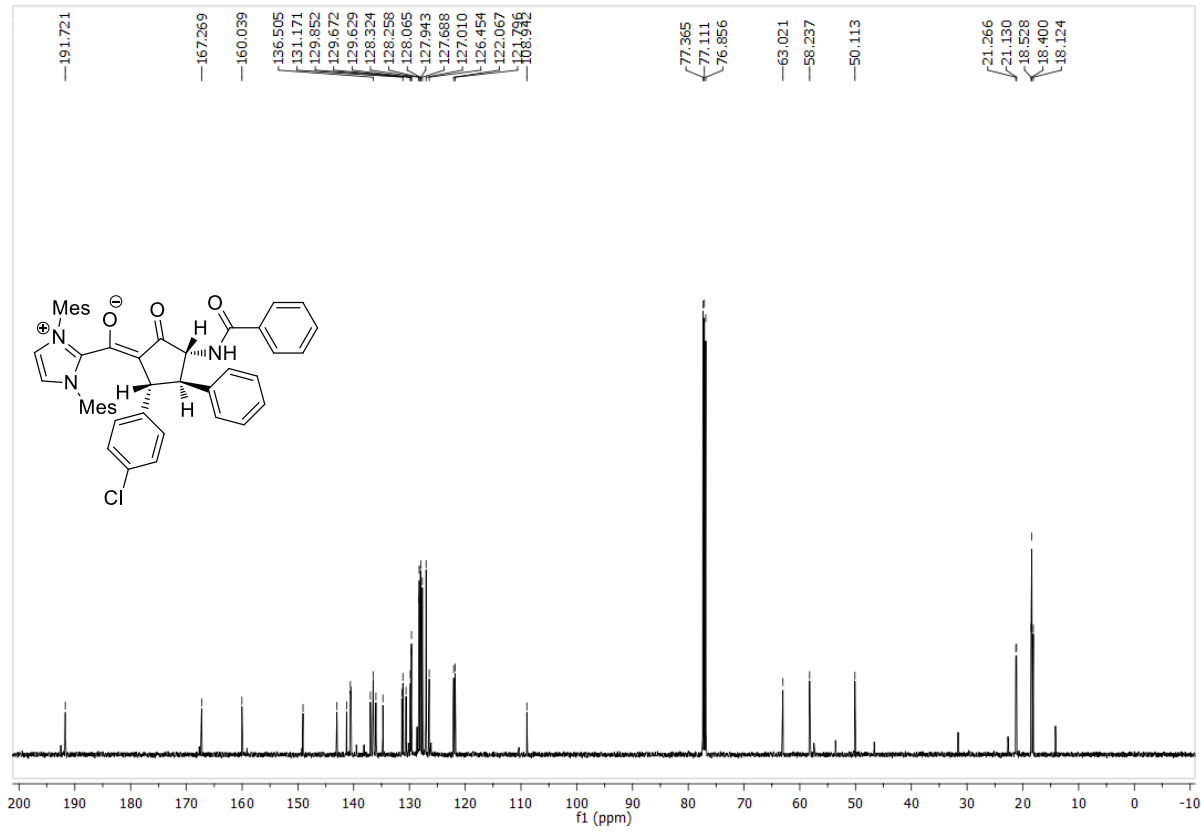
4p. (Z)-(3-benzamido-5-(4-chlorophenyl)-2-oxo-4-phenylcyclopentylidene) (1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



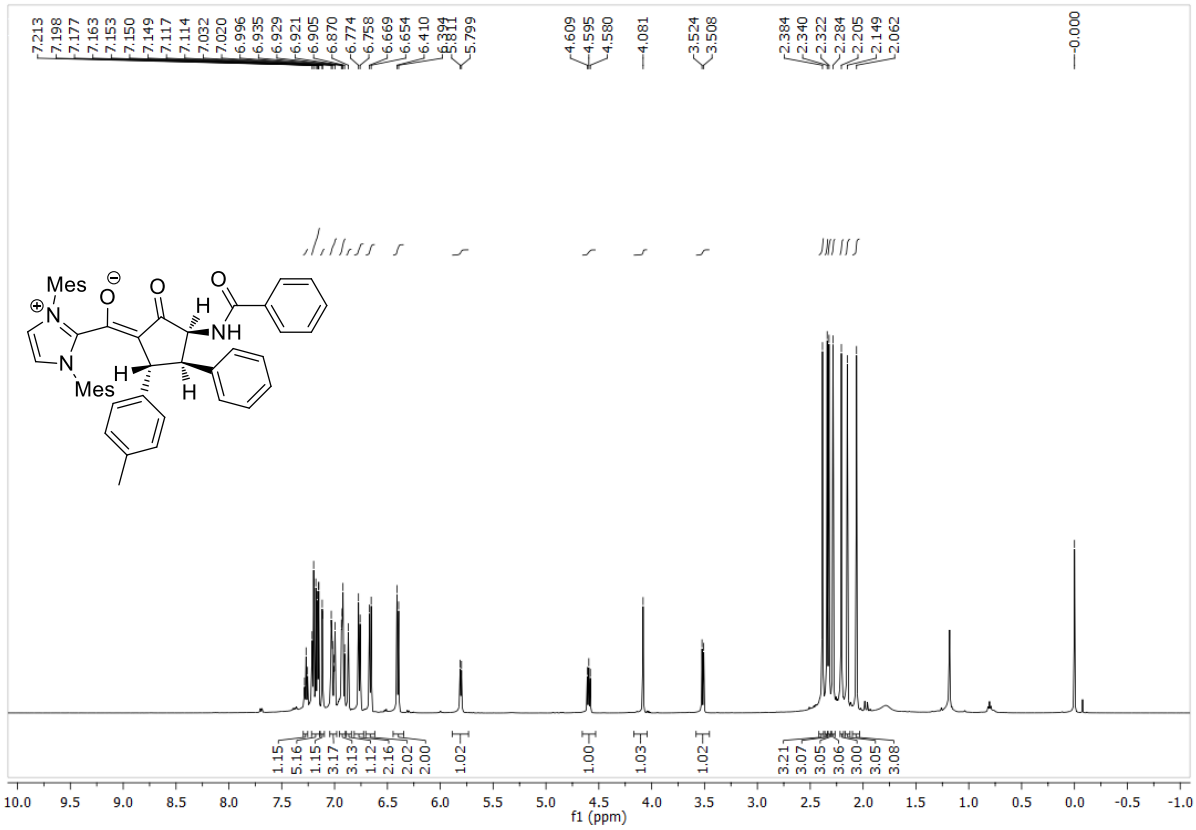


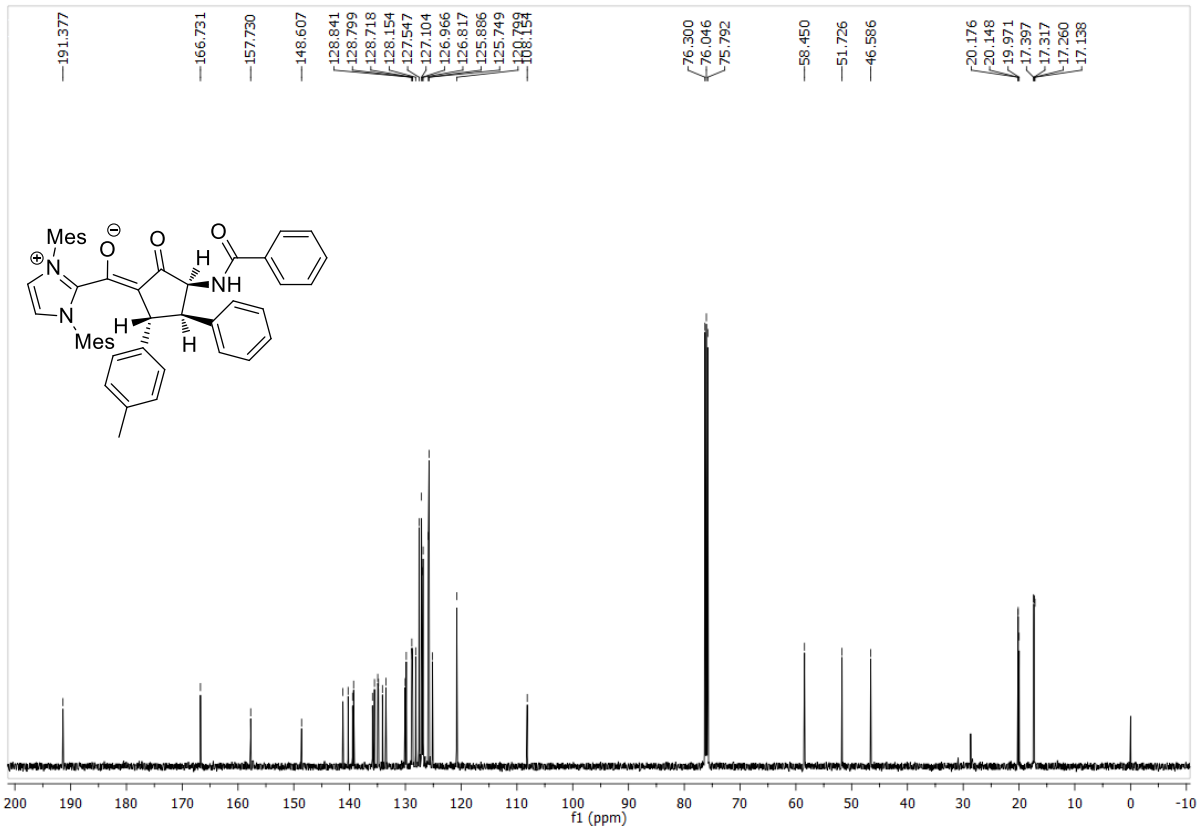
4p’. (Z)-(3-benzamido-5-(4-chlorophenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



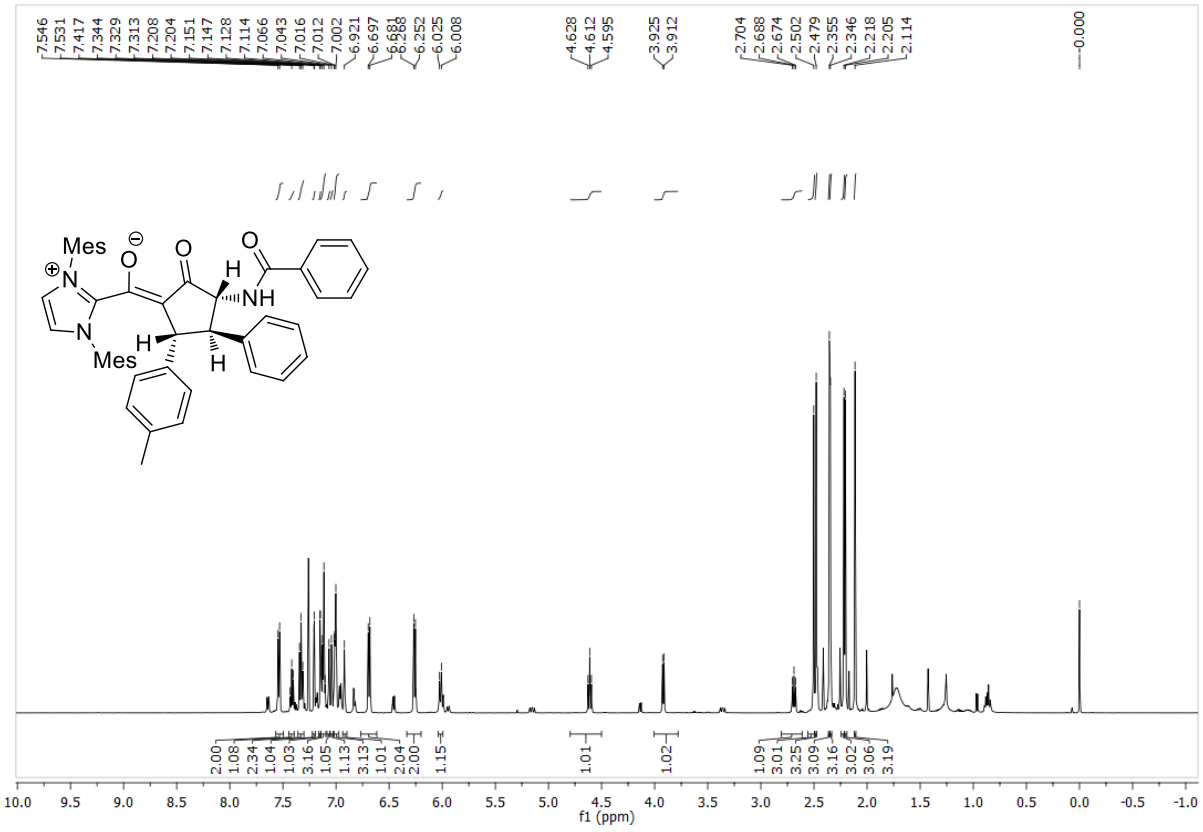


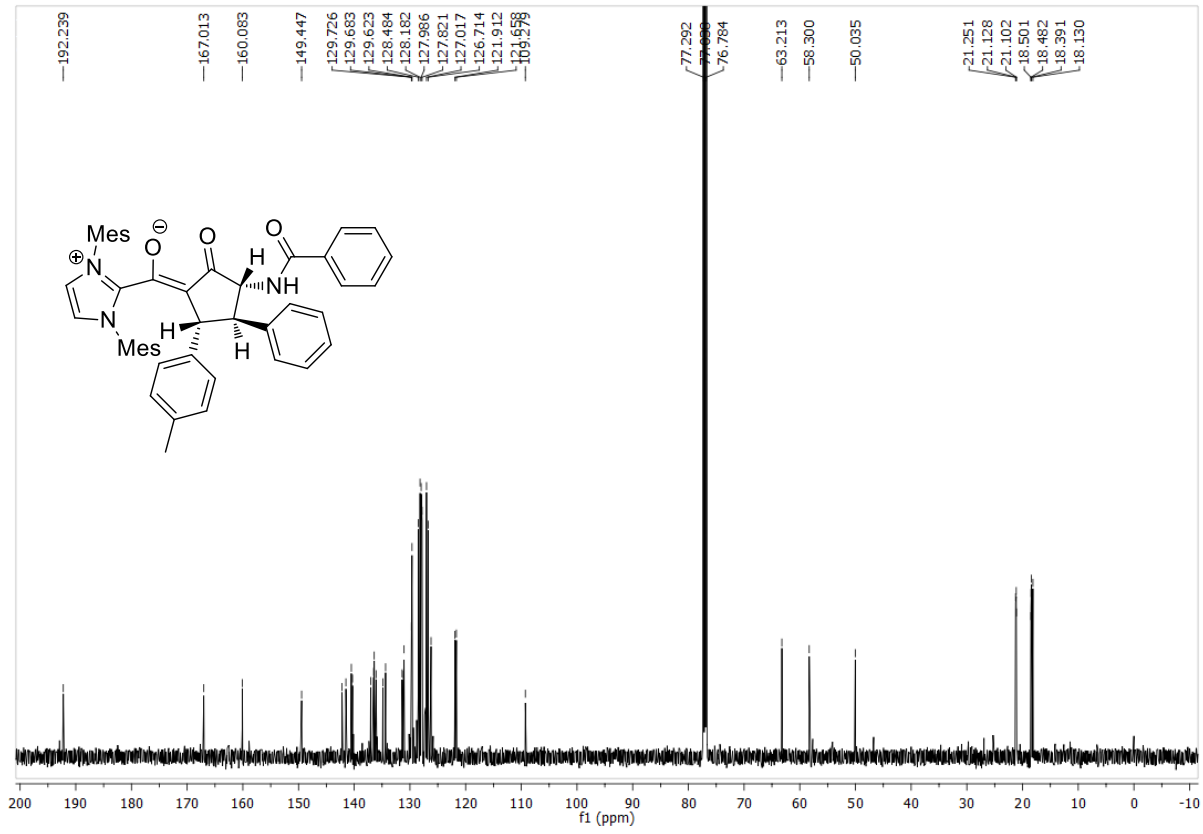
4q. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



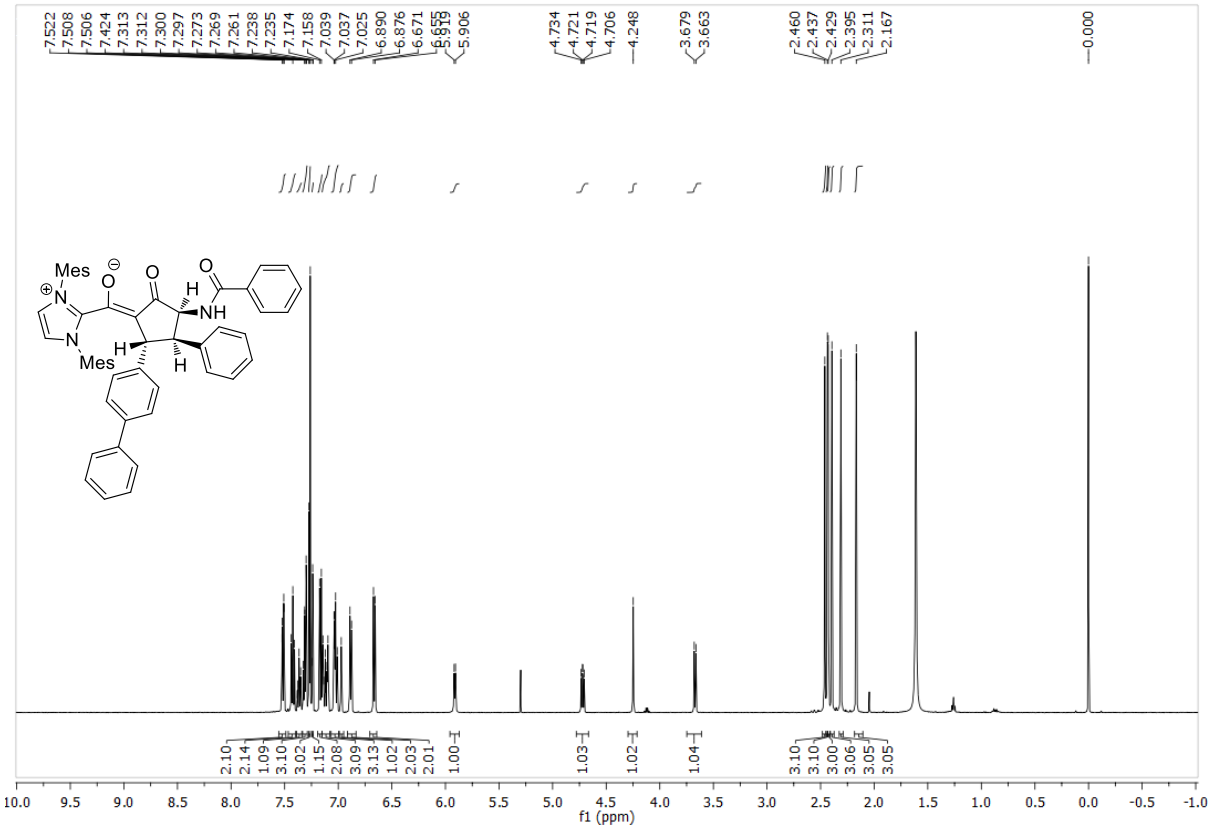


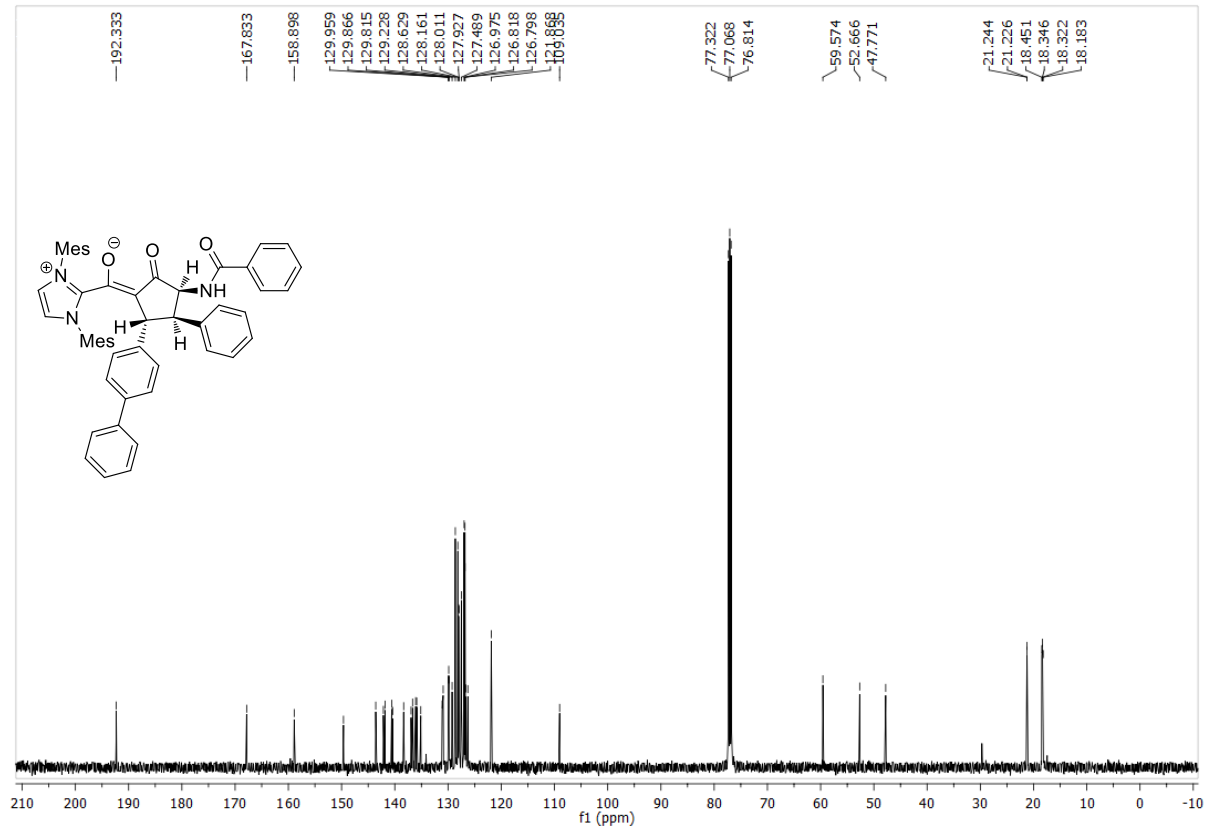
4q’. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(p-tolyl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



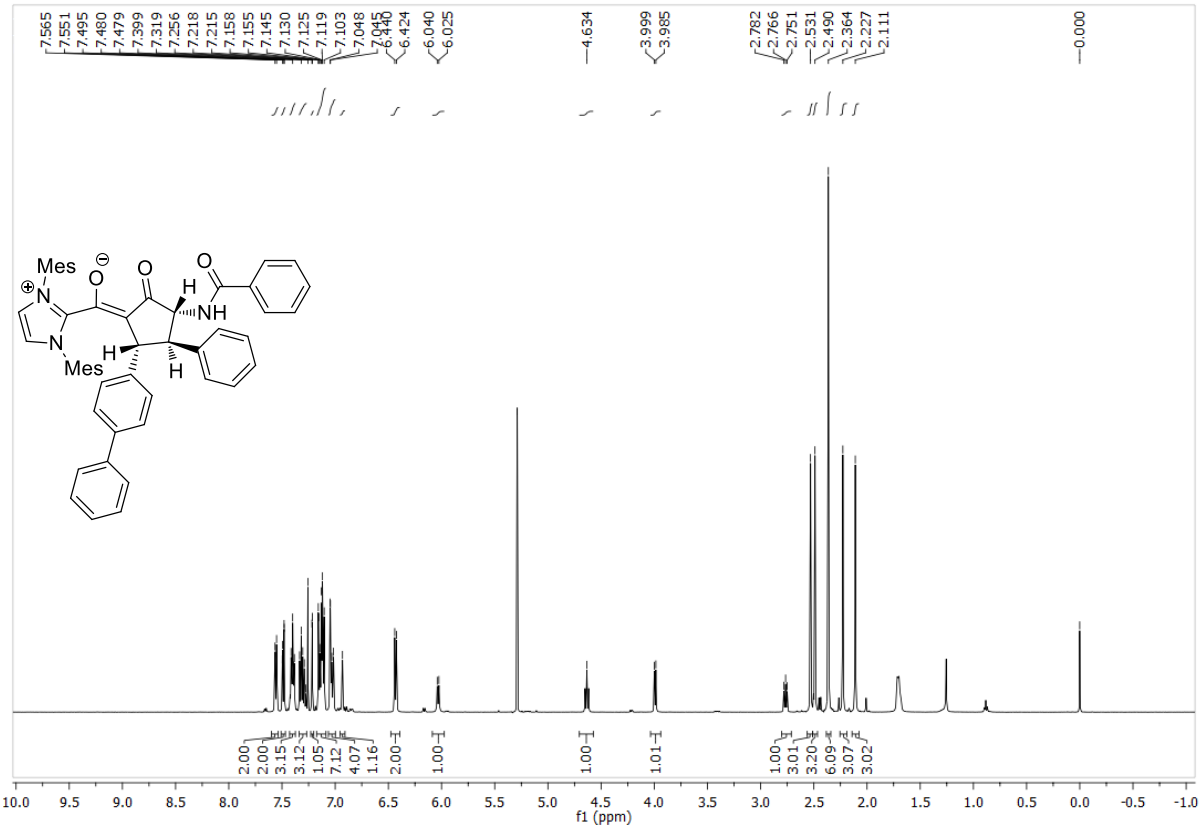


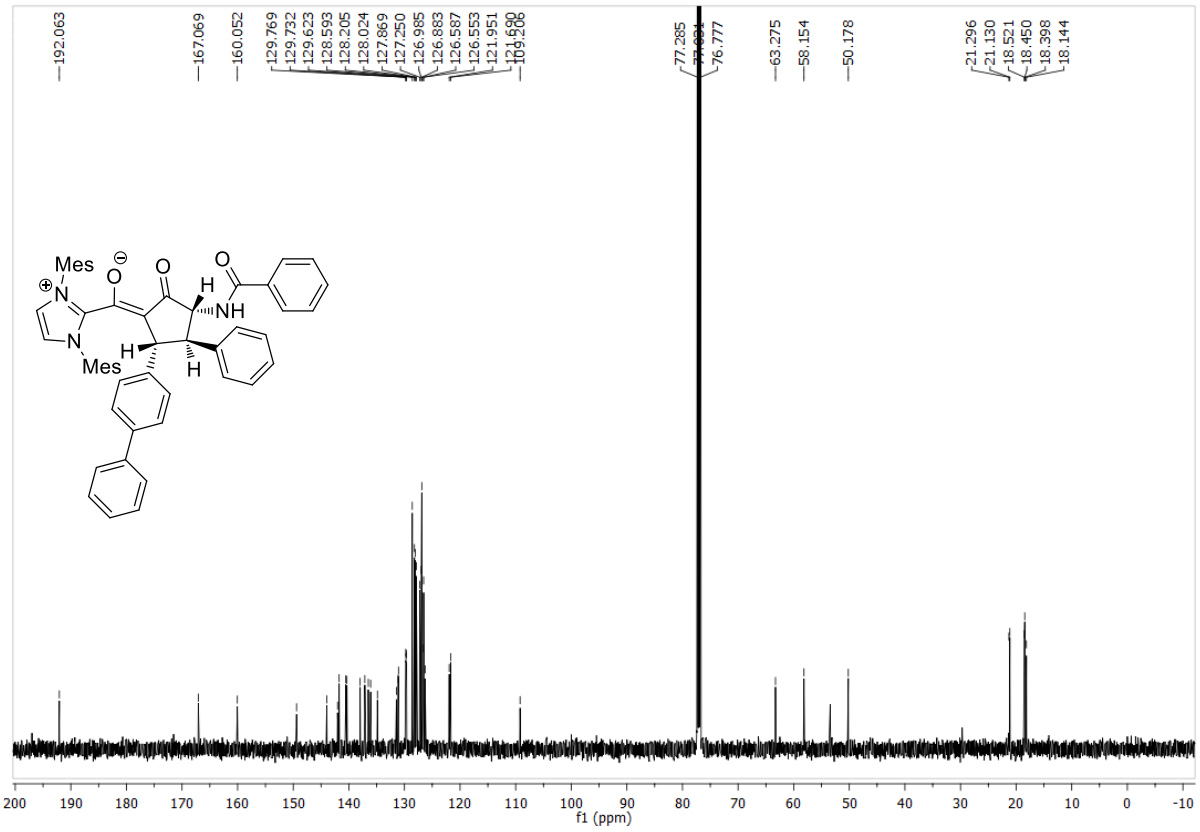
4r. (Z)-(2-([1,1'-biphenyl]-4-yl)-4-benzamido-5-oxo-3-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



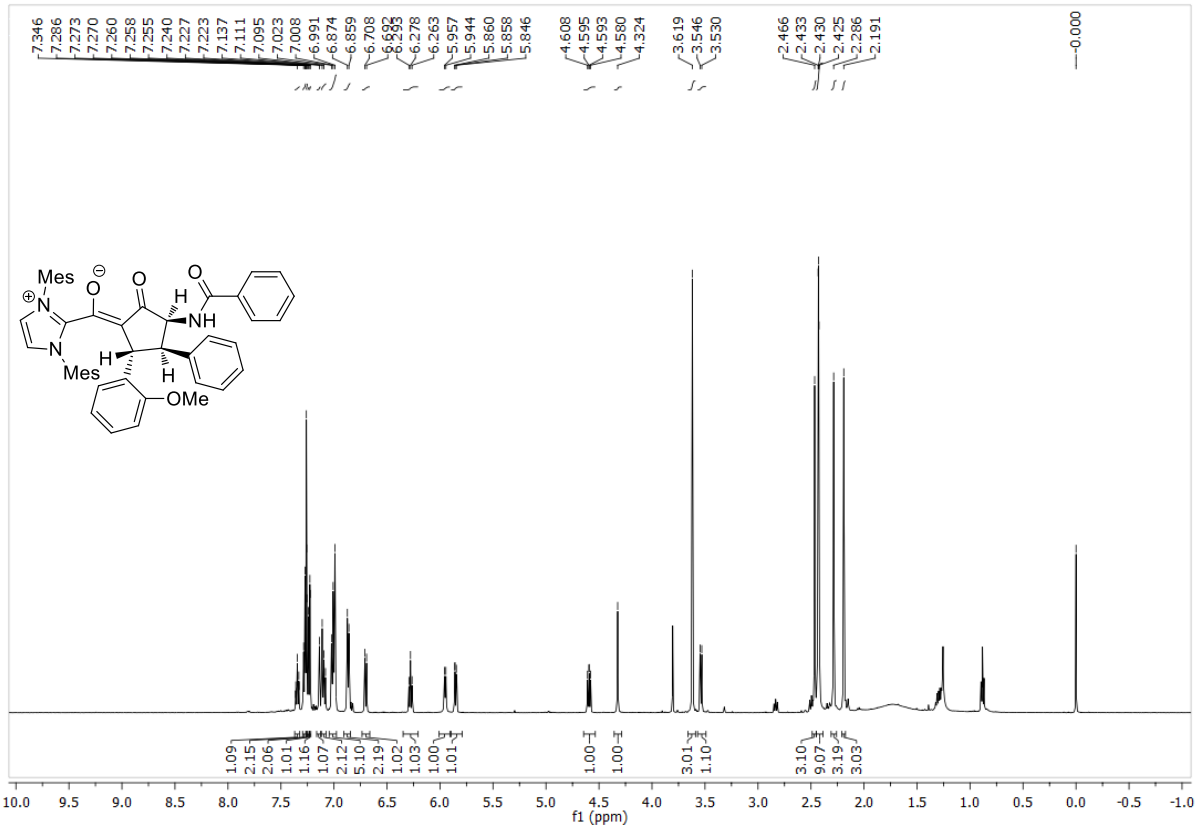


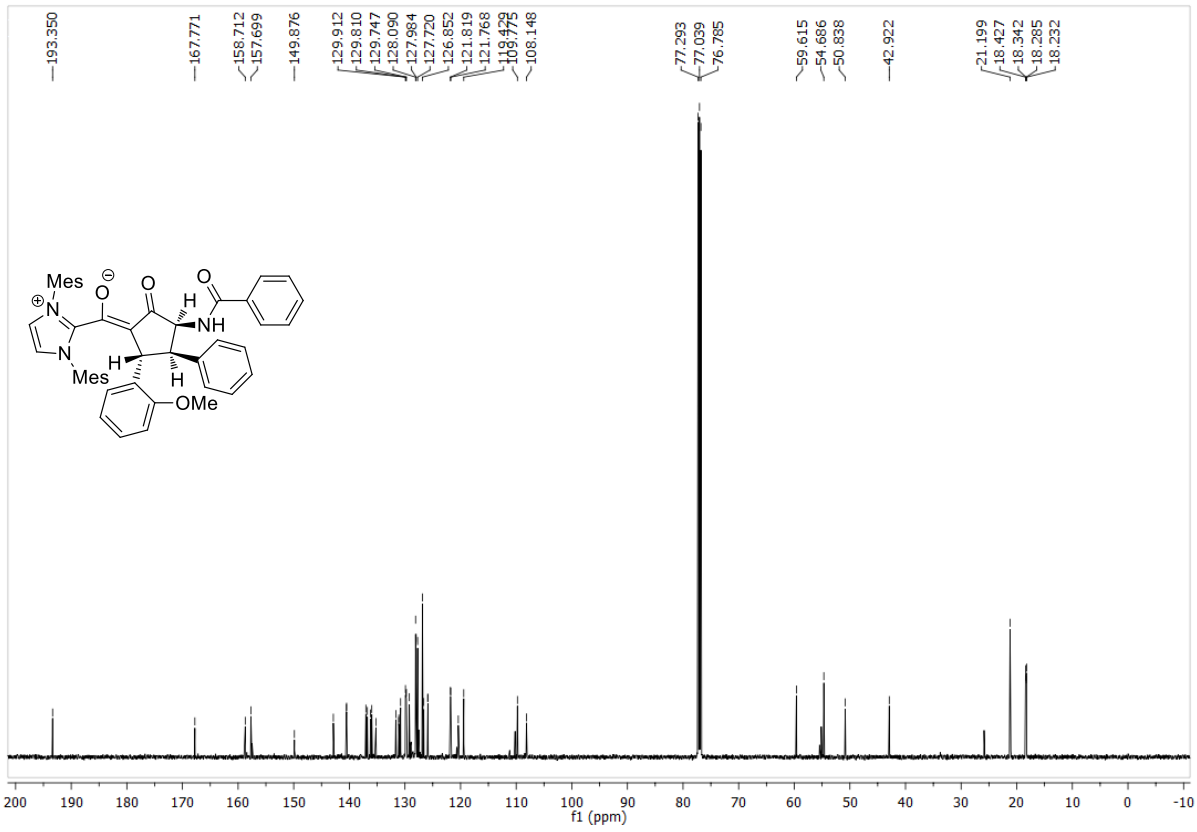
4r’. (Z)-(2-([1,1'-biphenyl]-4-yl)-4-benzamido-5-oxo-3-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



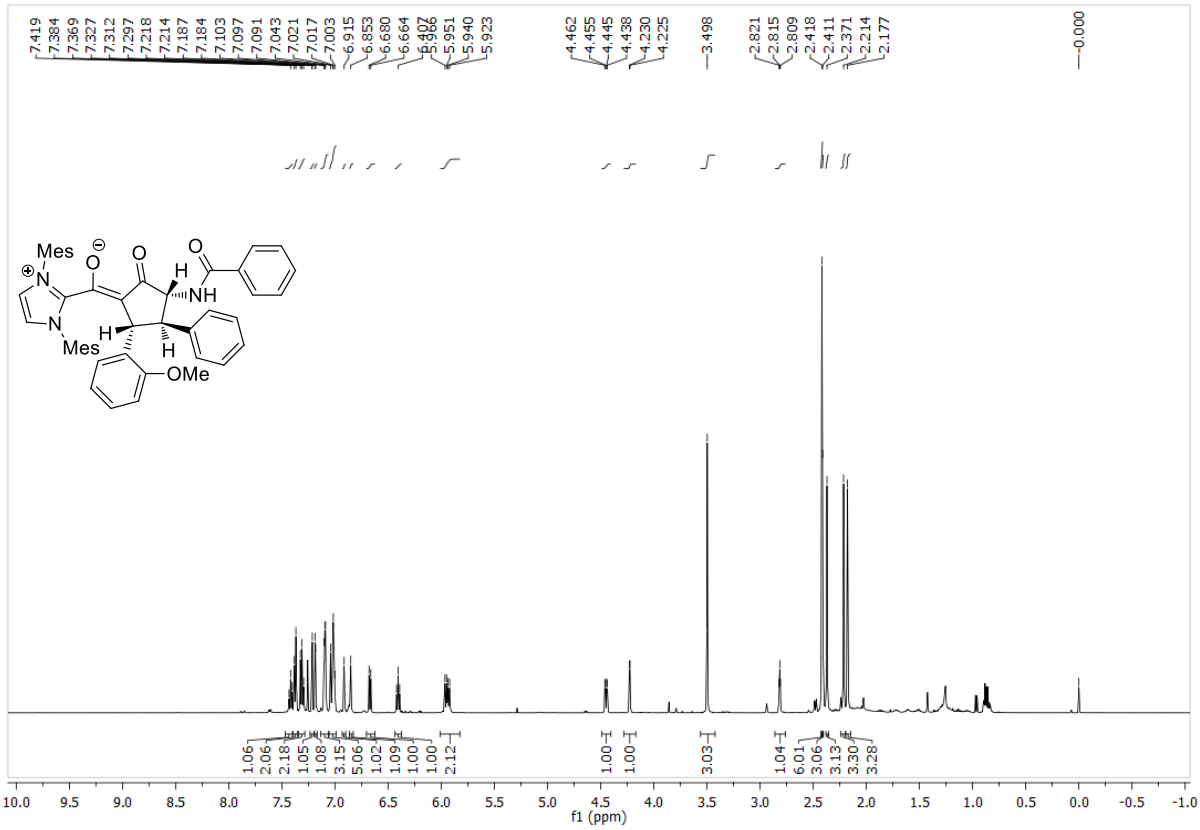


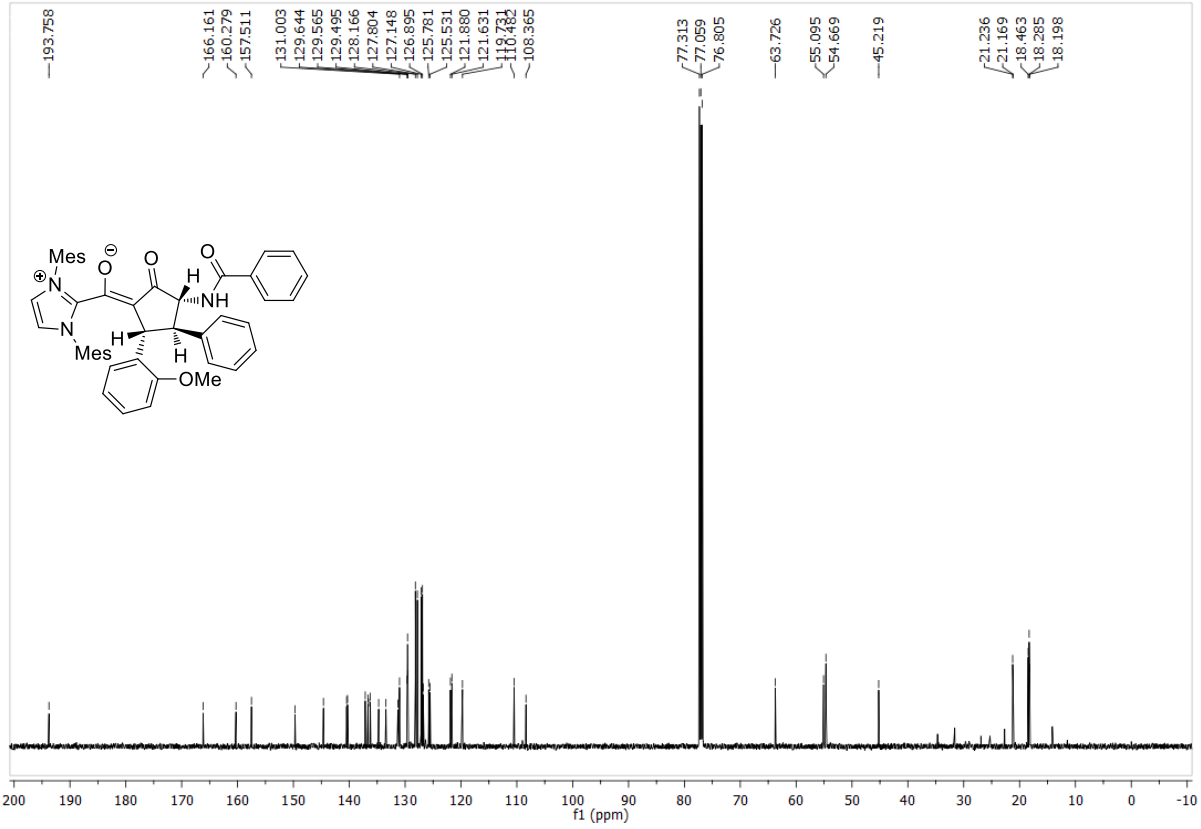
4s. (Z)-(3-benzamido-5-(2-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



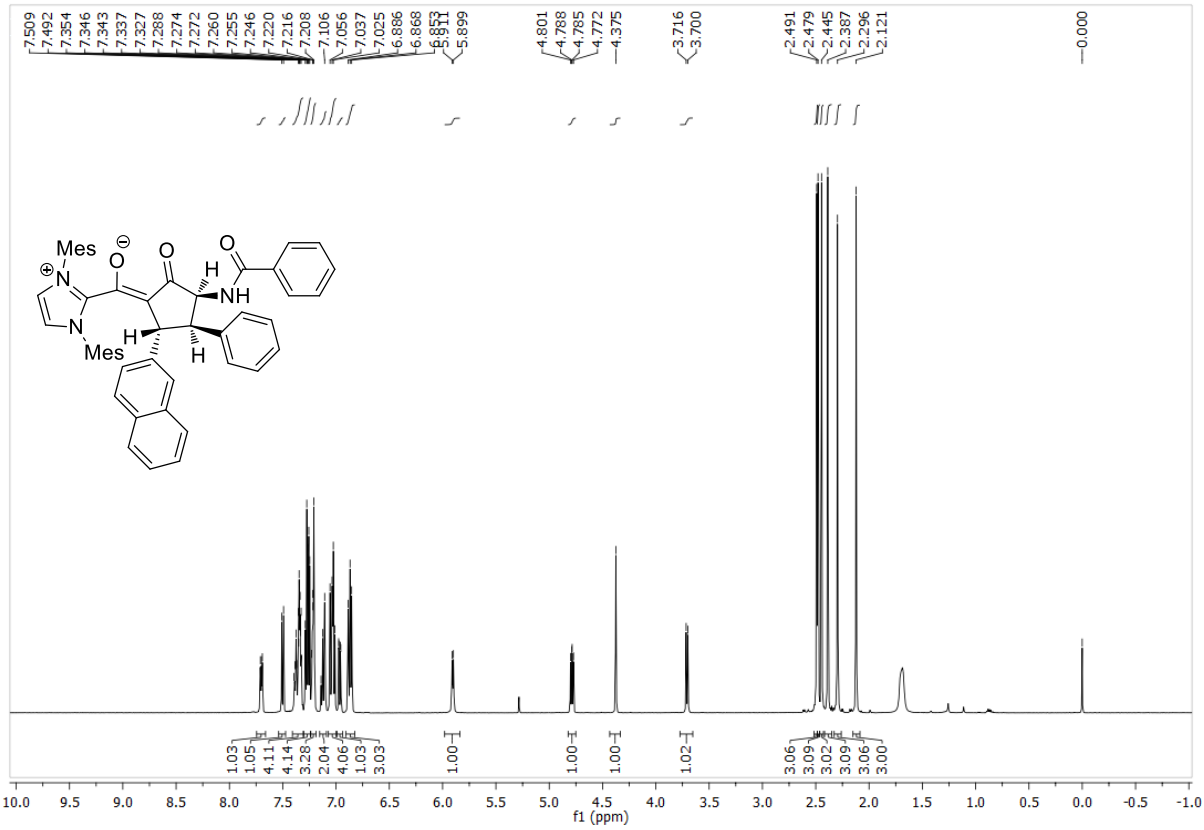


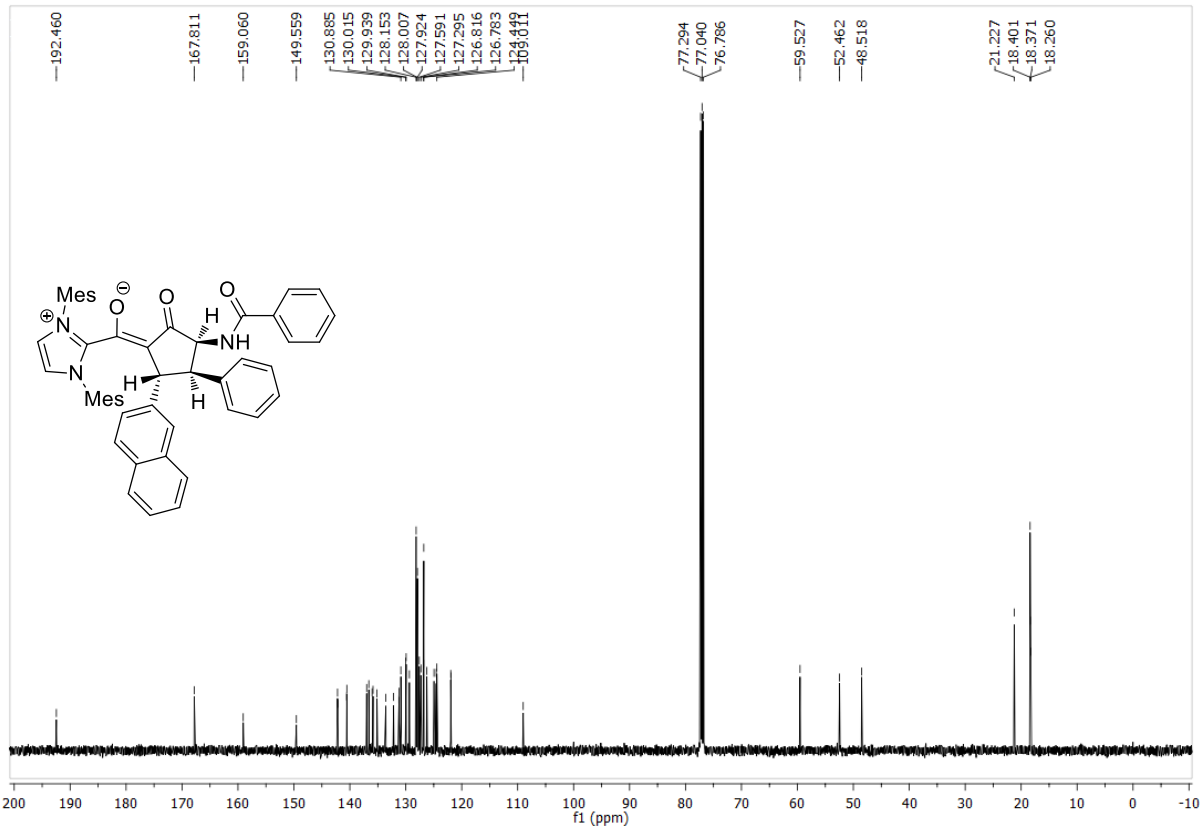
4s’. (Z)-(3-benzamido-5-(2-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



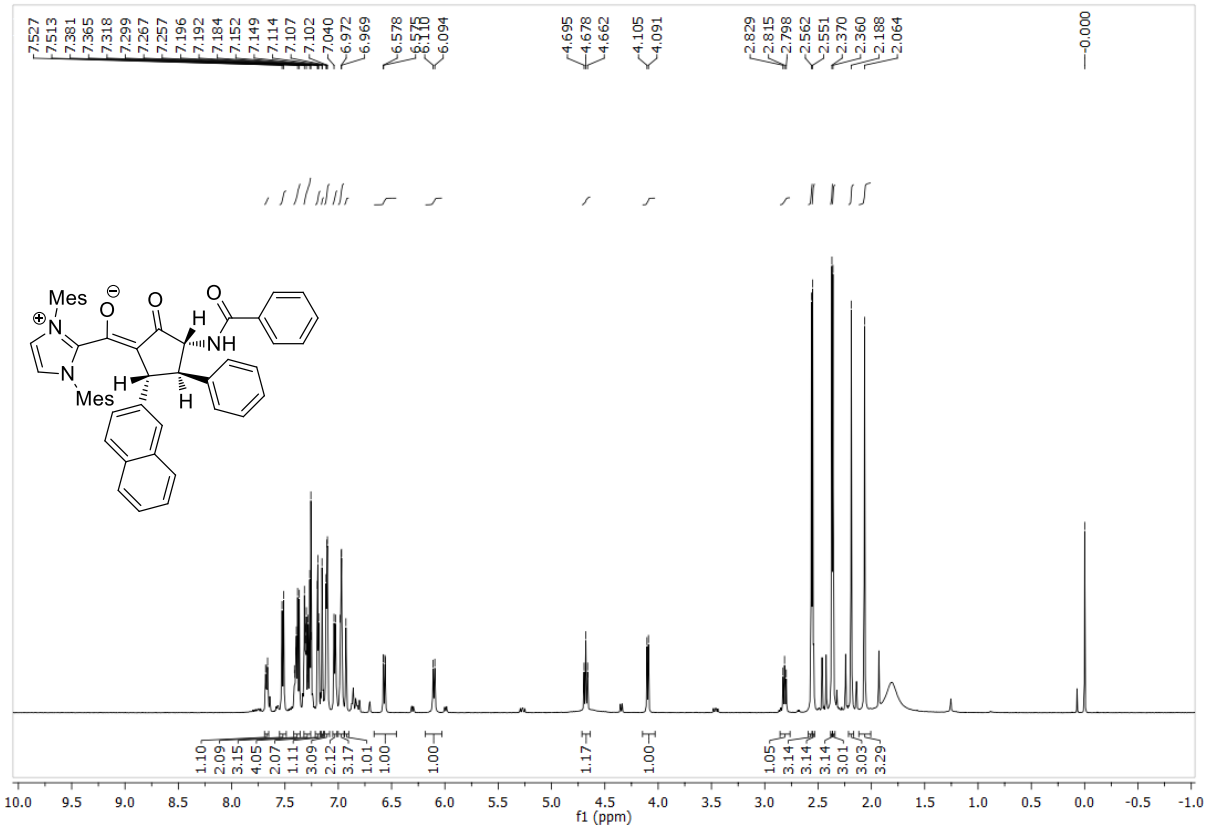


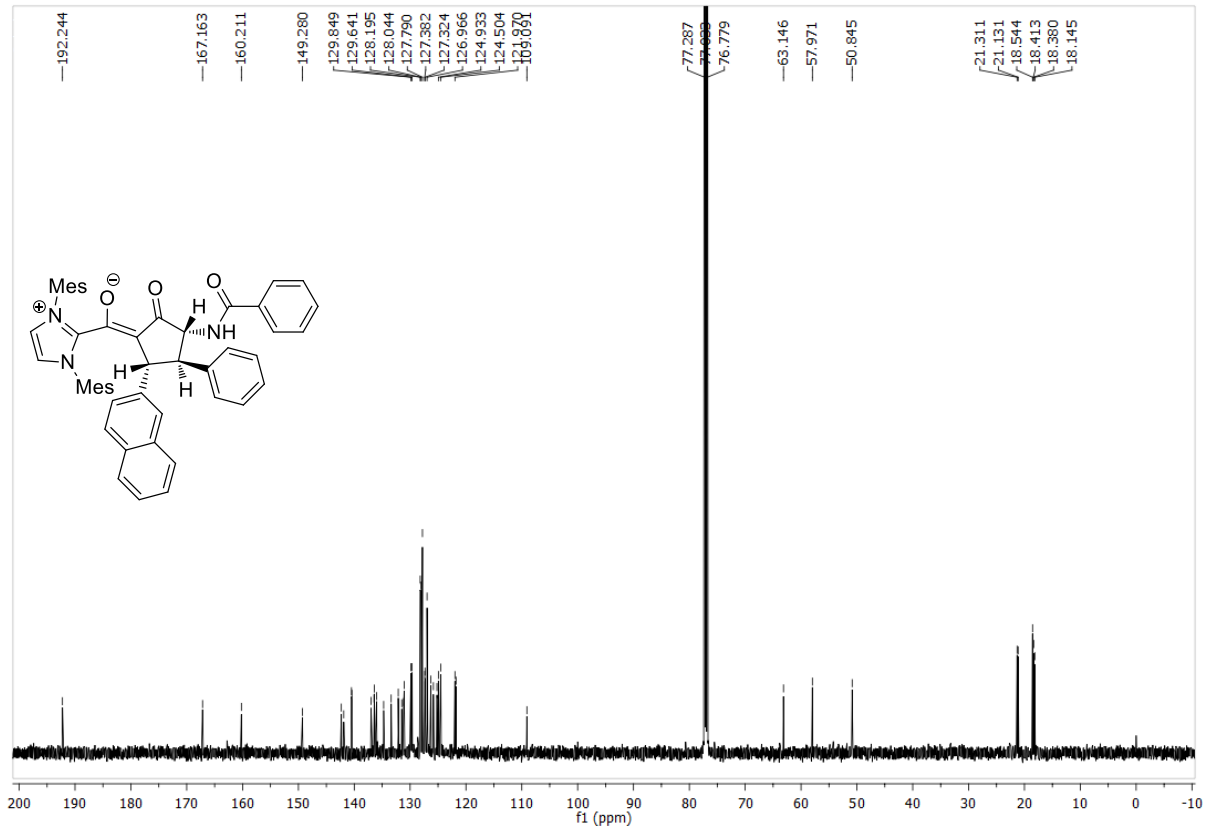
4t. (Z)-(3-benzamido-5-(naphthalen-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



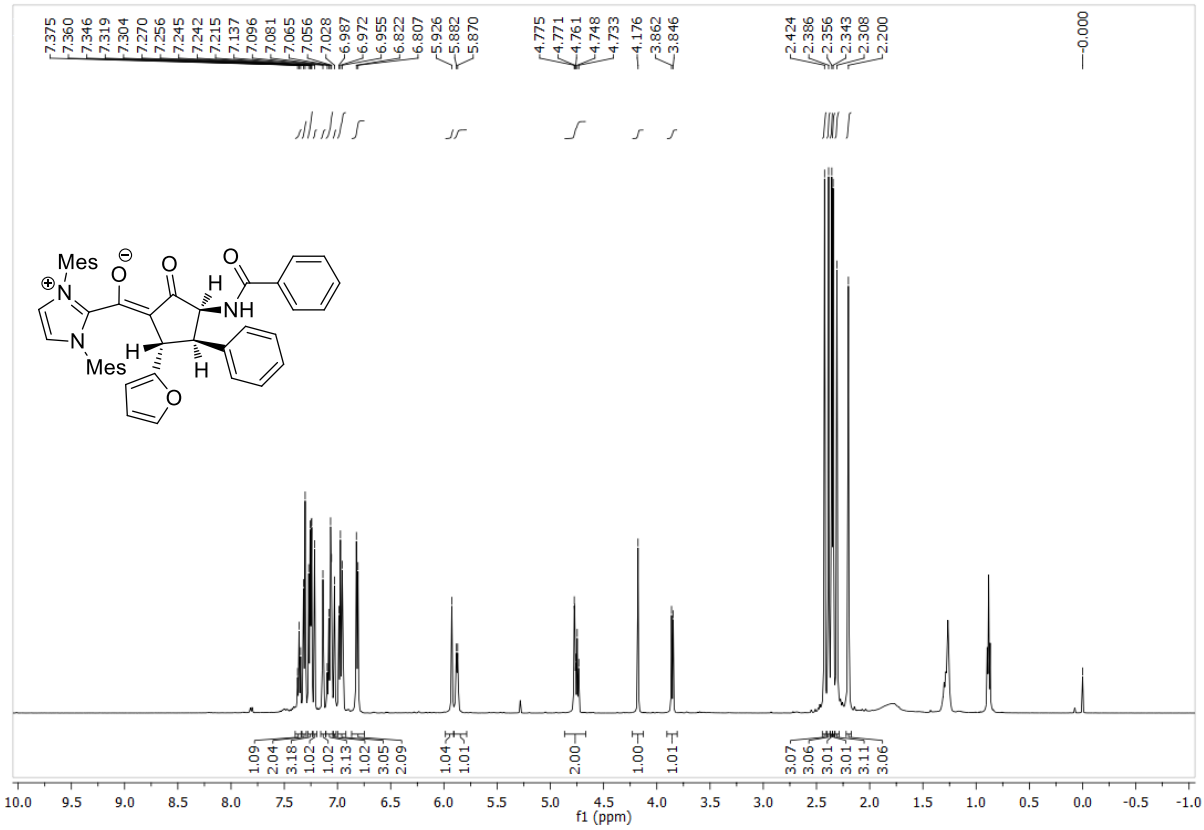


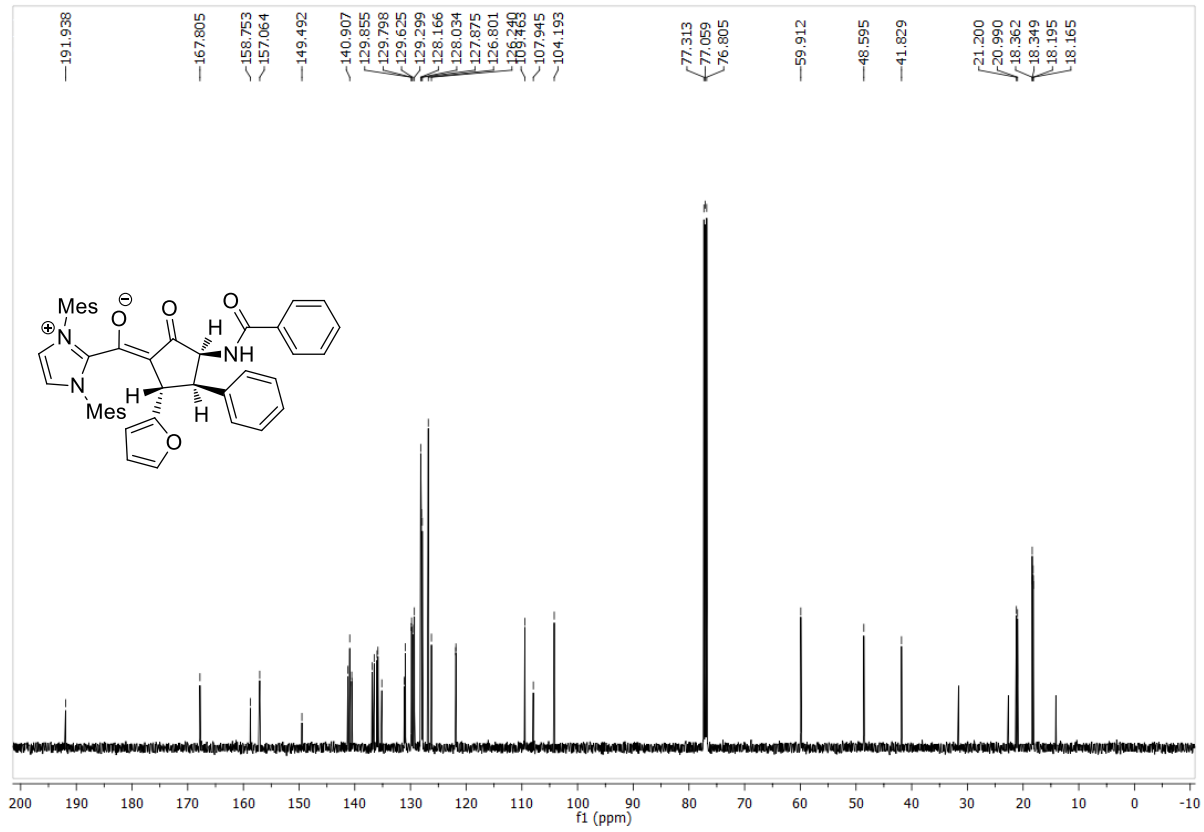
4t’. (Z)-(3-benzamido-5-(naphthalen-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



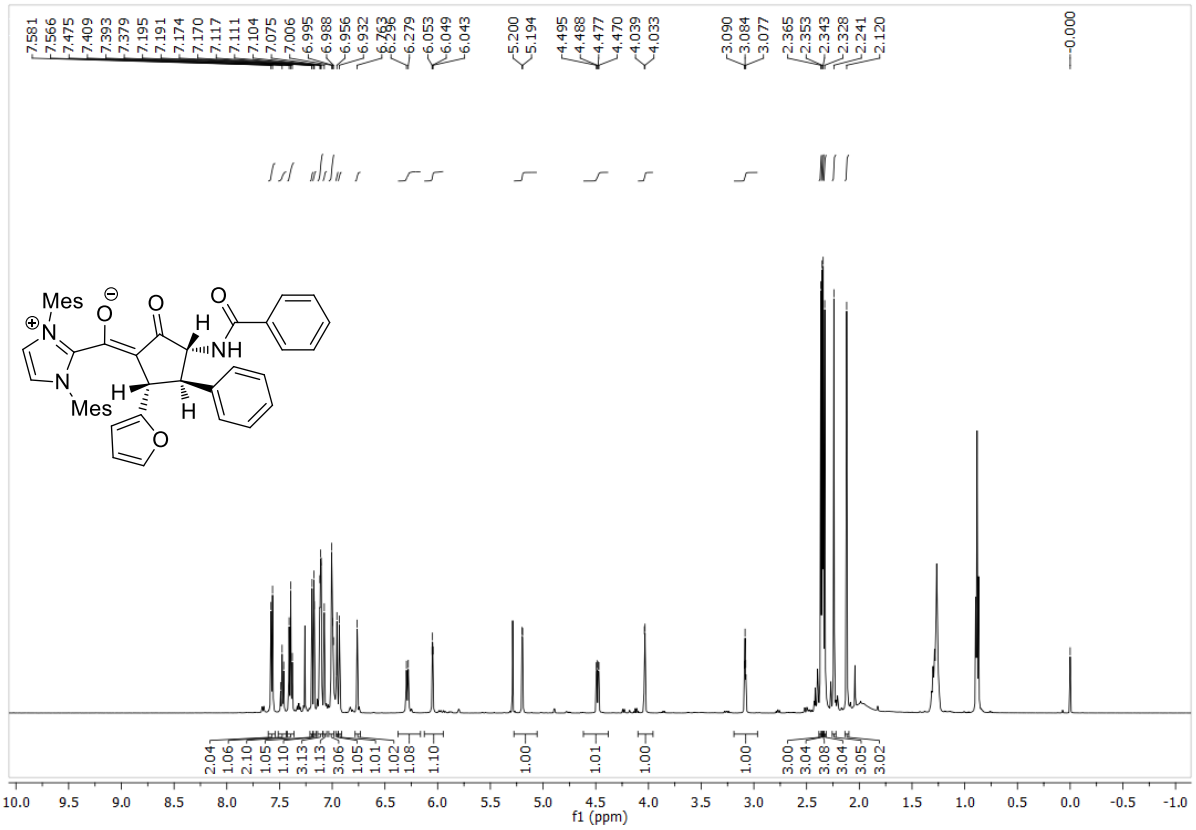


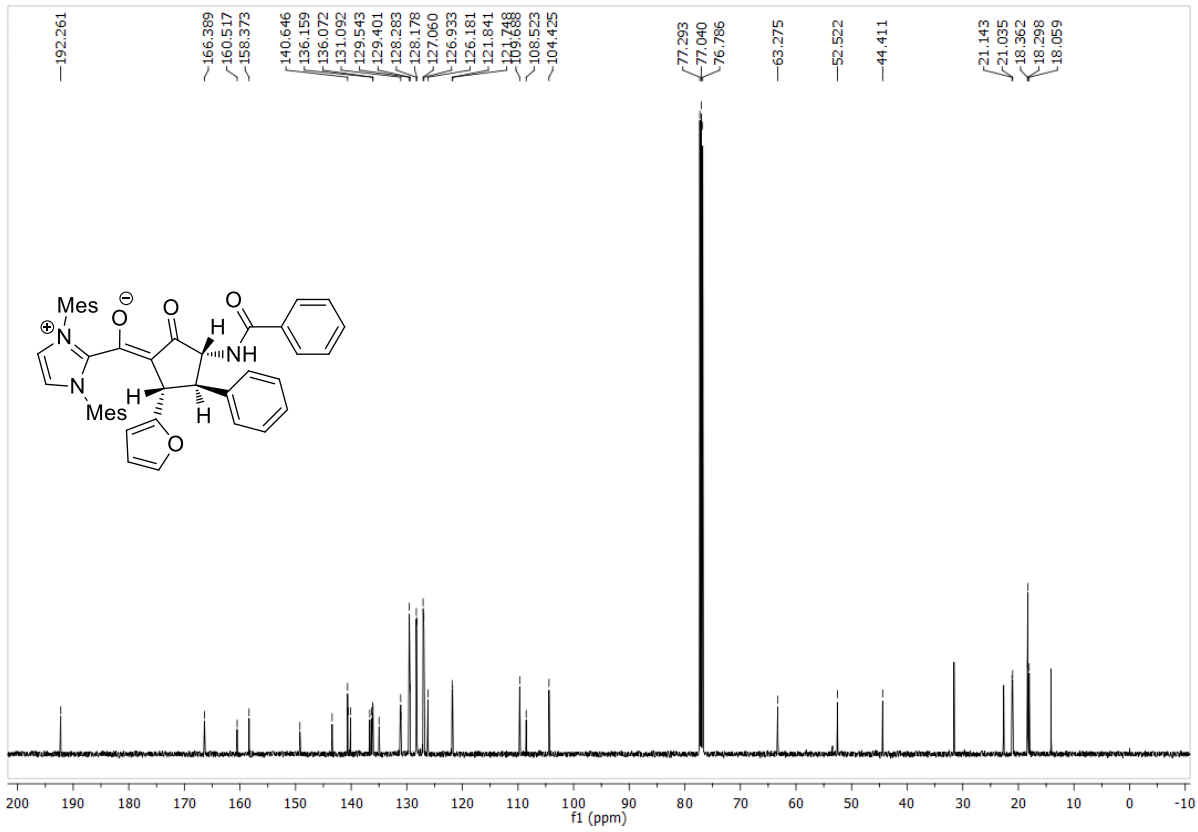
4u. (Z)-(3-benzamido-5-(furan-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



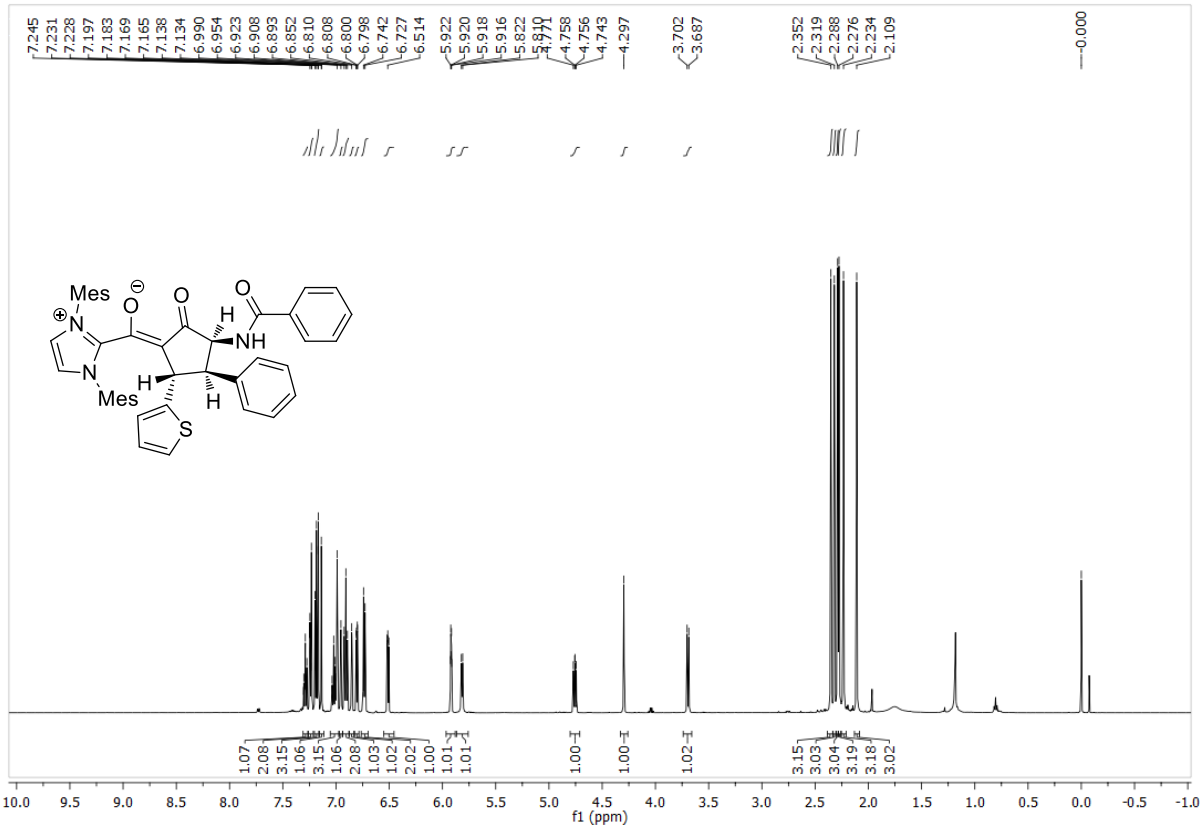


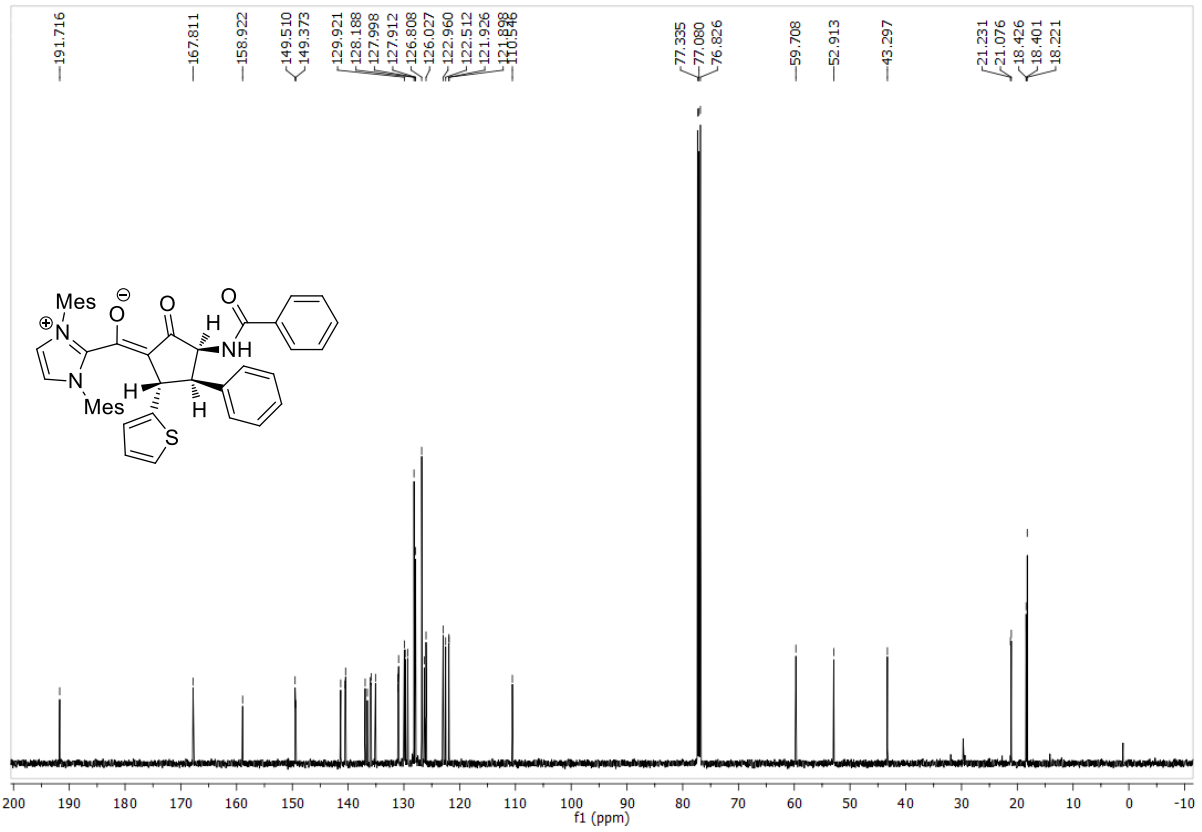
4u’. (Z)-(3-benzamido-5-(furan-2-yl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



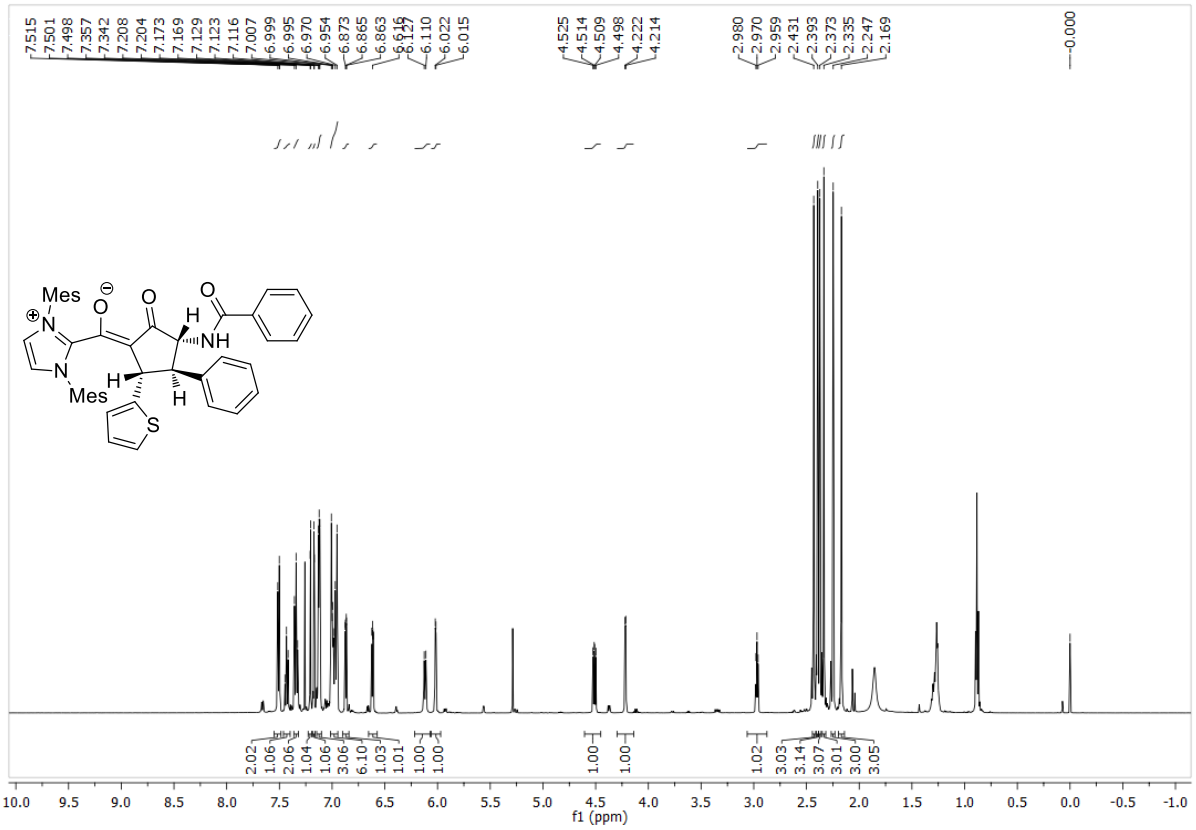


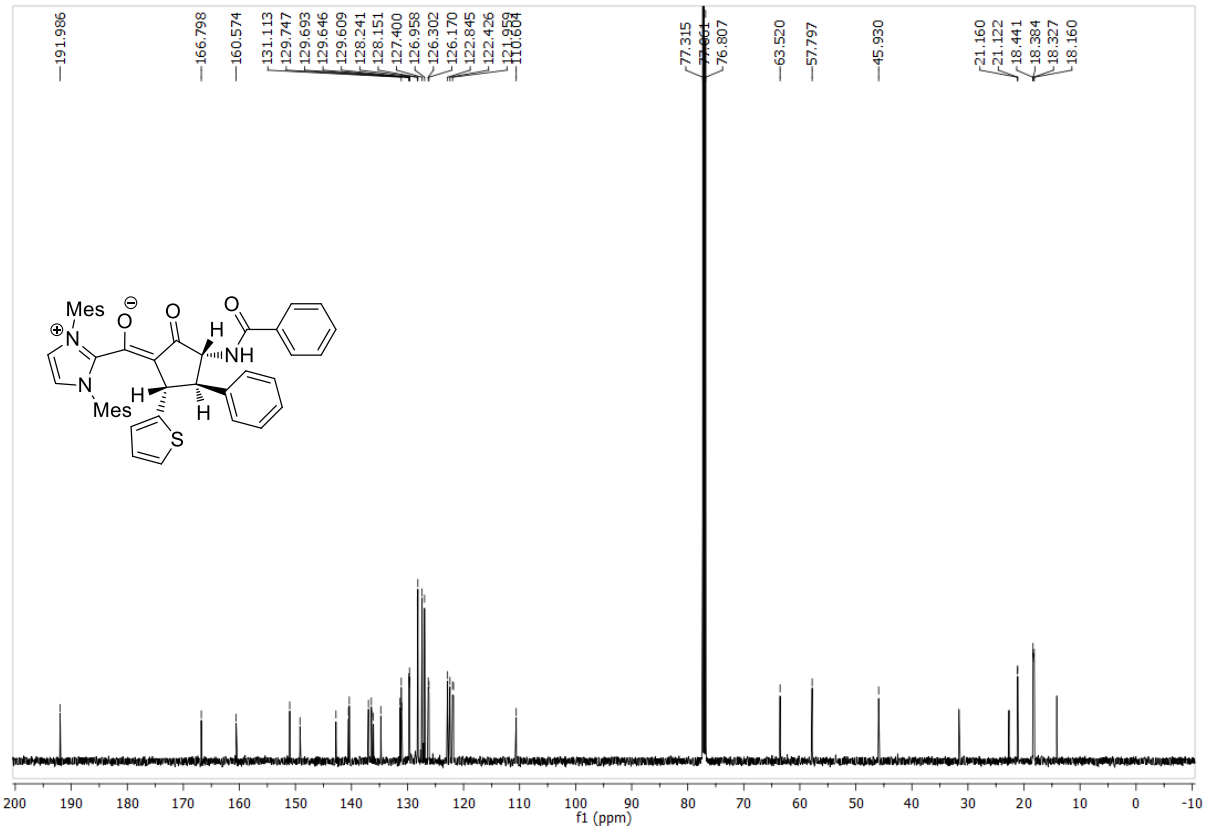
4v. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



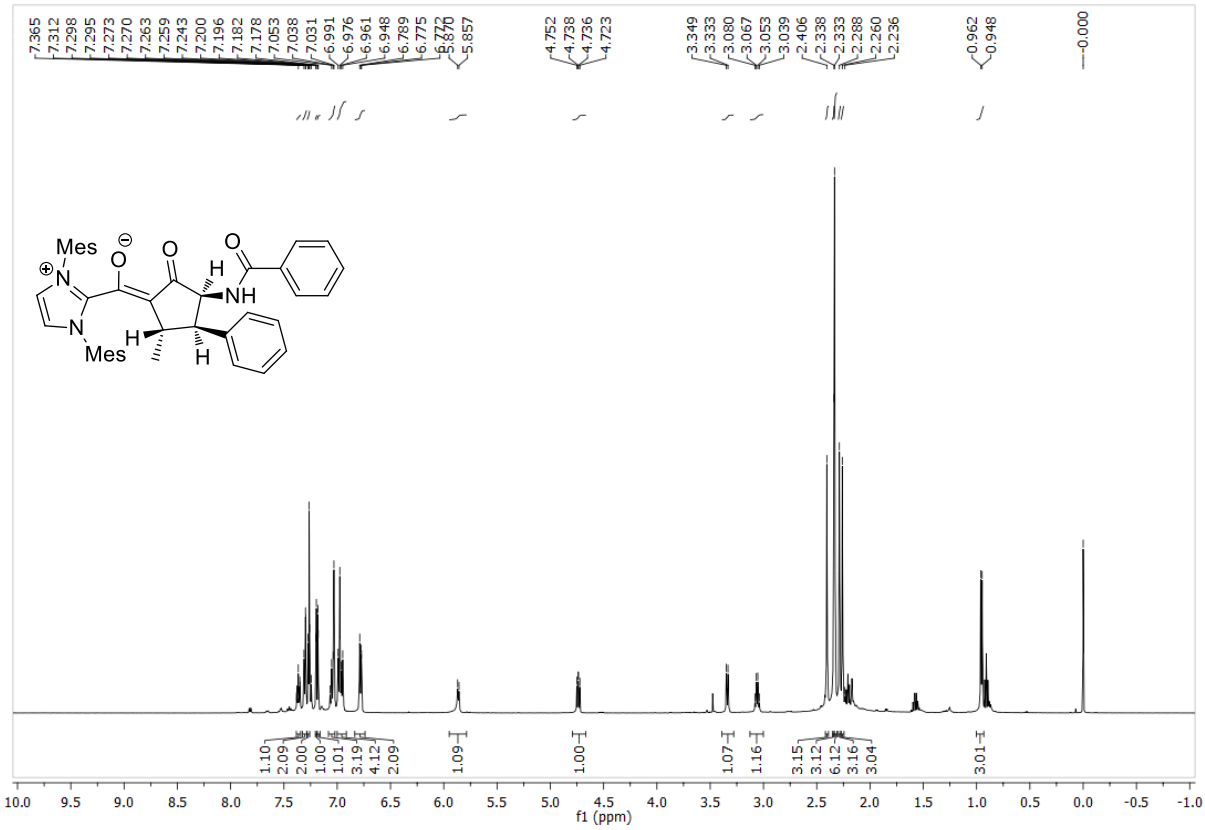


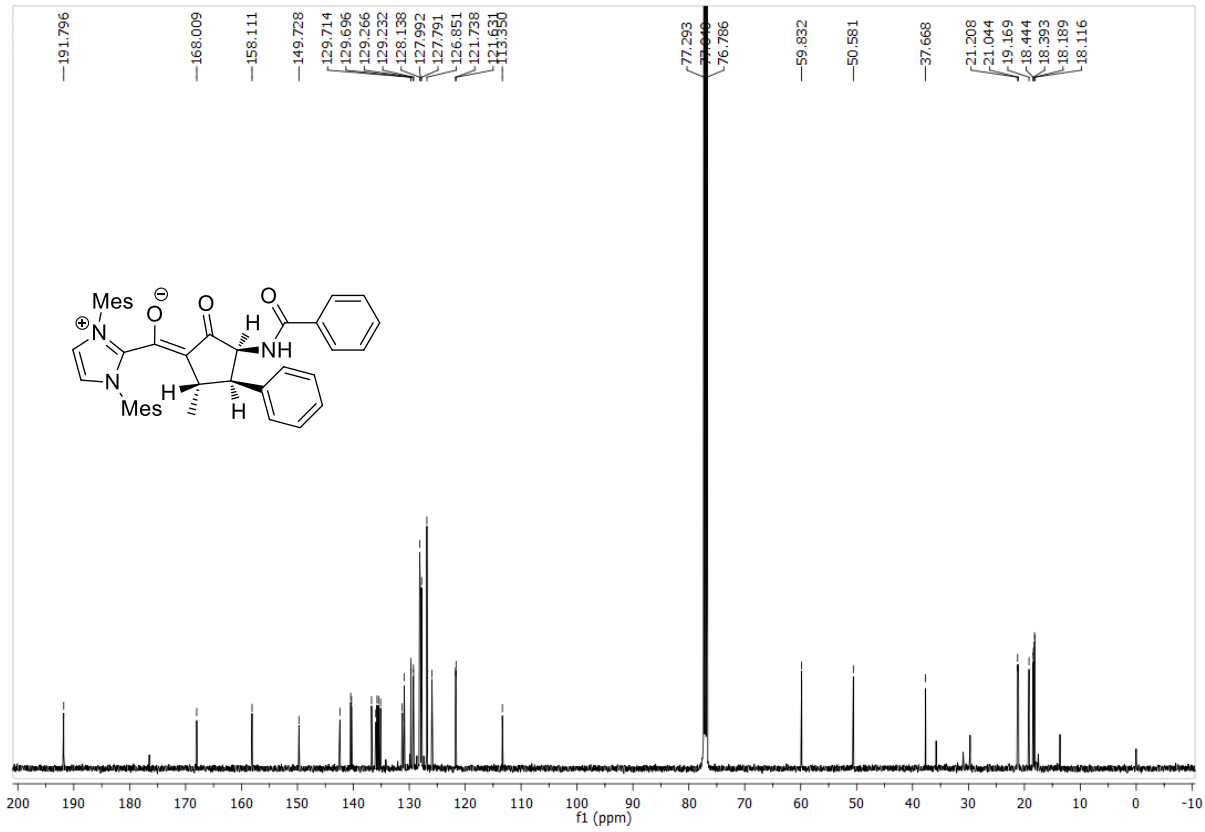
4v'. (Z)-(3-benzamido-2-oxo-4-phenyl-5-(thiophen-2-yl)cyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



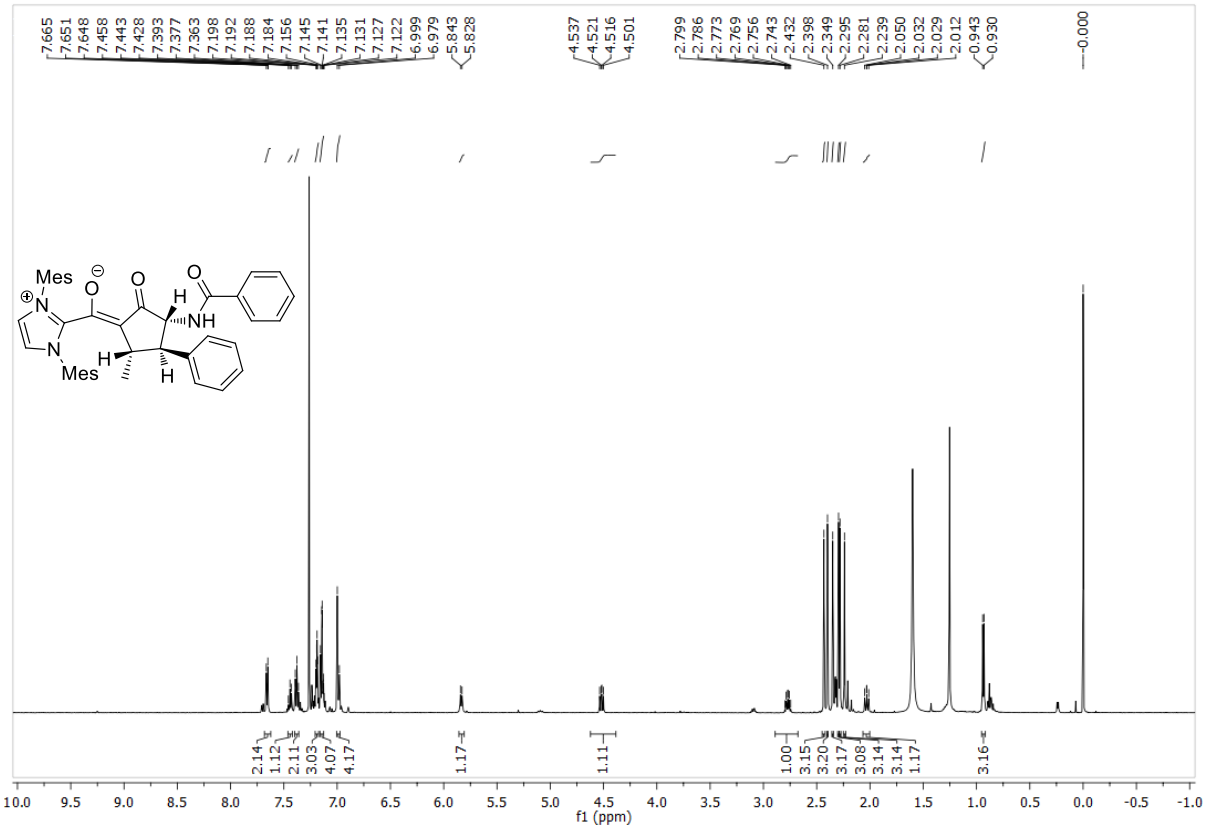


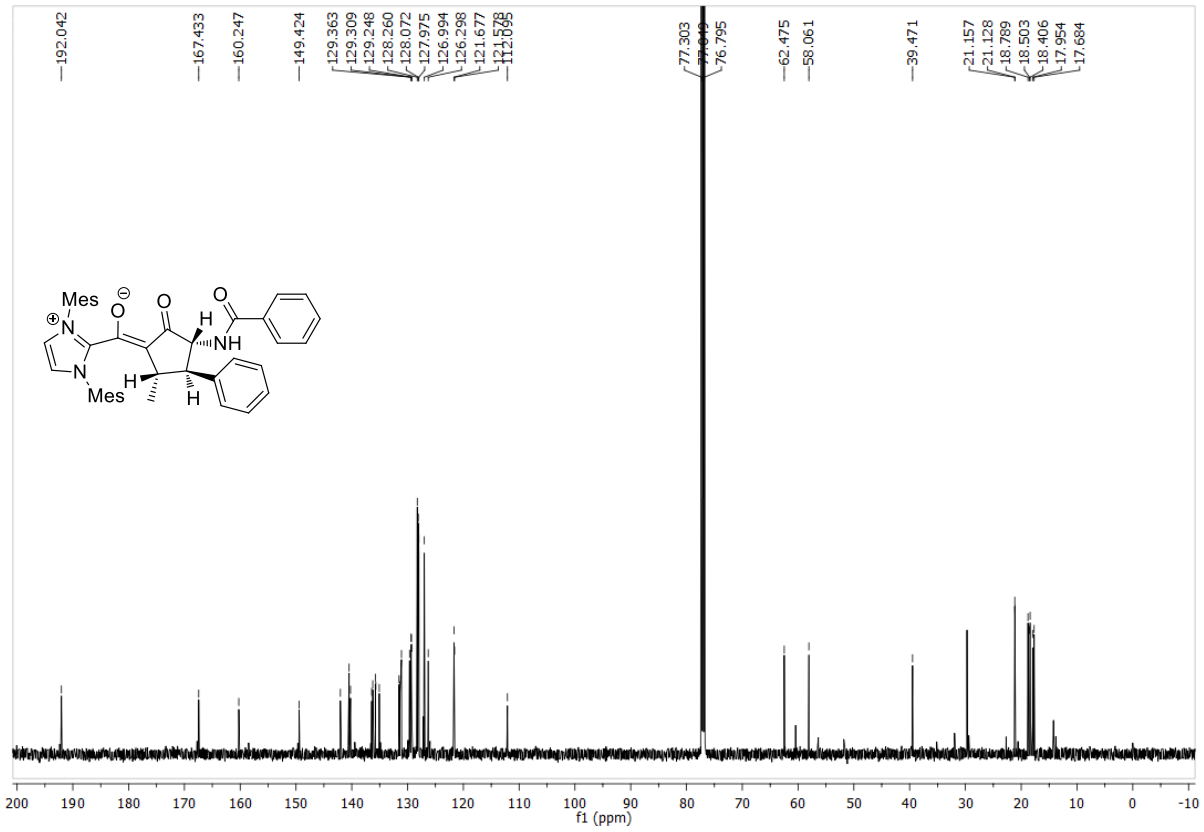
4w. (Z)-(3-benzamido-5-methyl-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



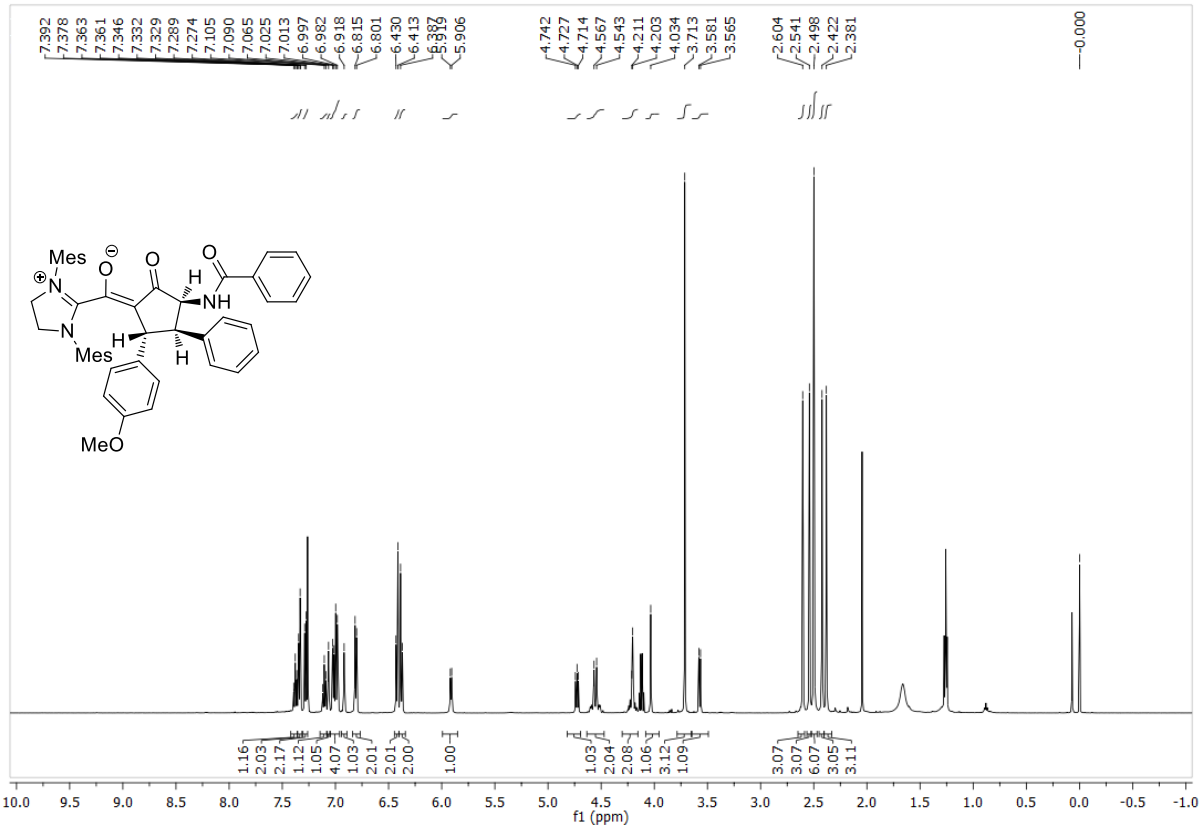


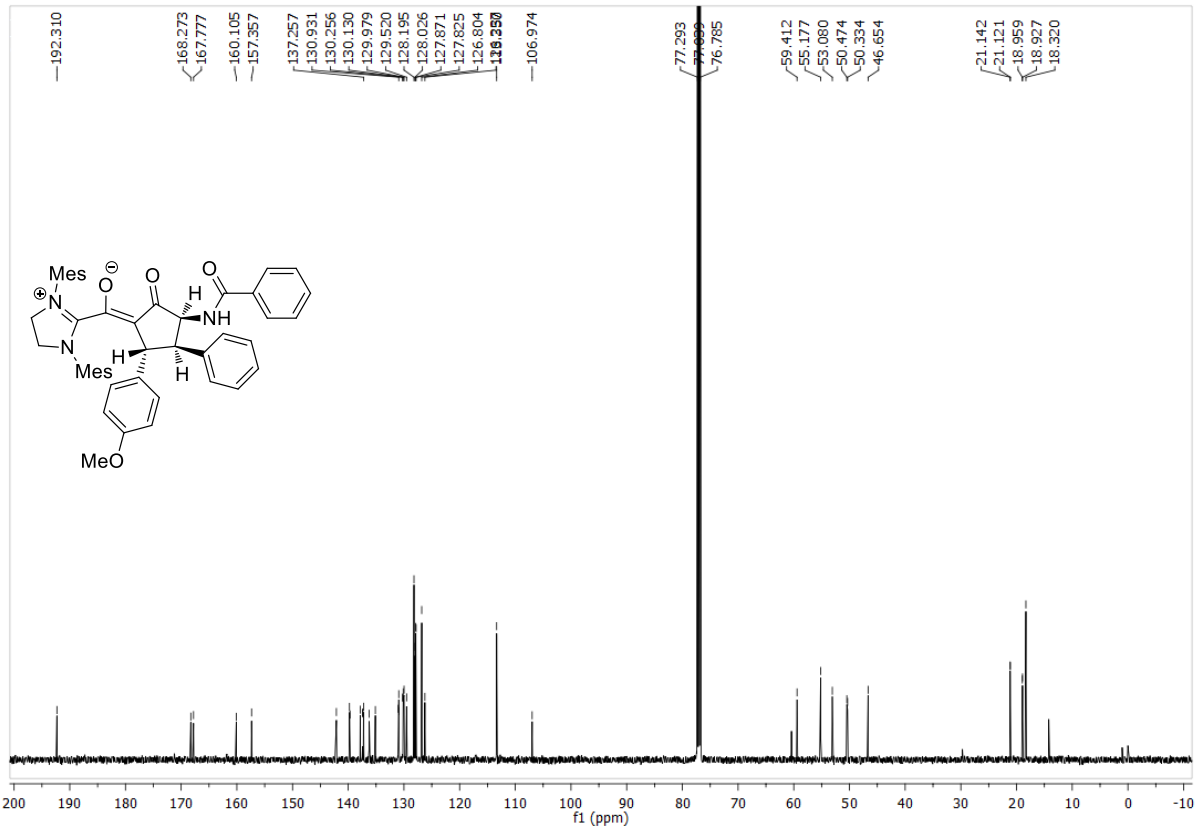
4w'. (Z)-(3-benzamido-5-methyl-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate



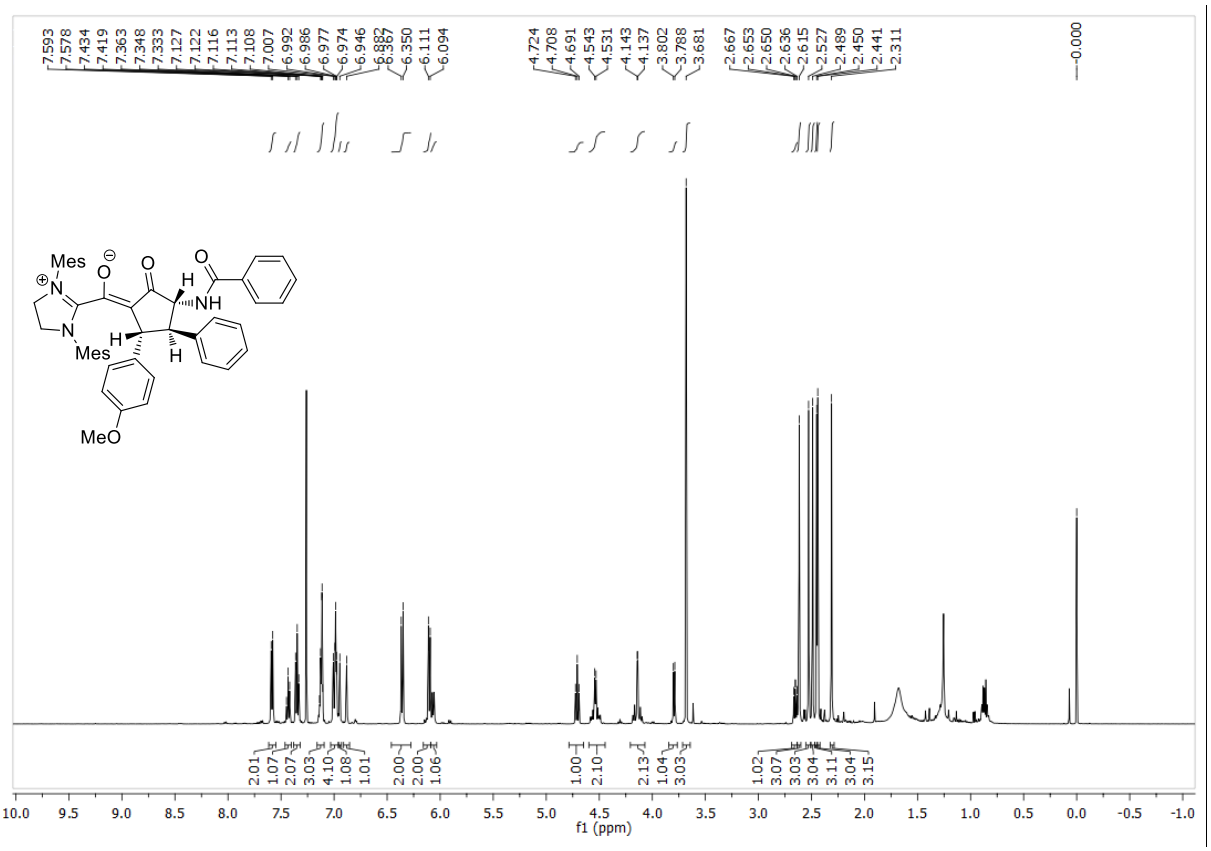


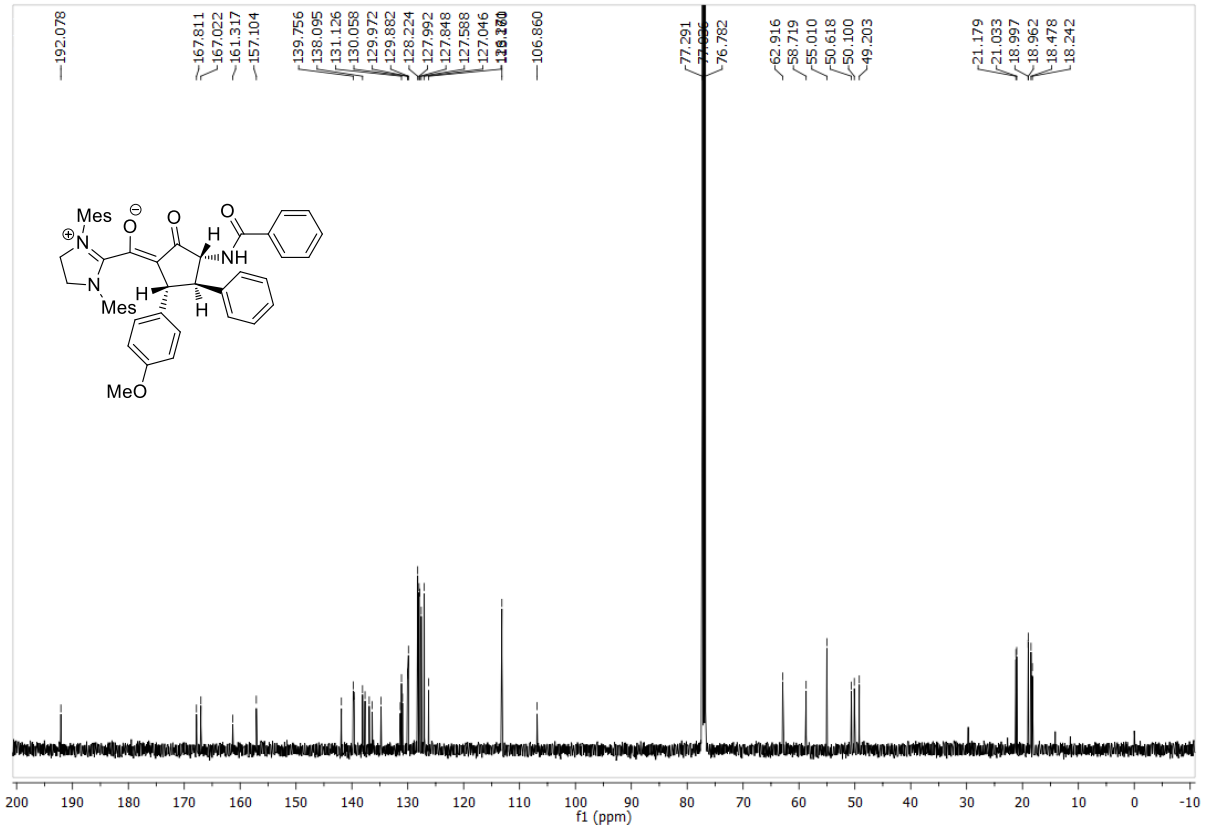
4x. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-4,5-dihydro-1H-imidazol-3-ium-2-yl)methanolate



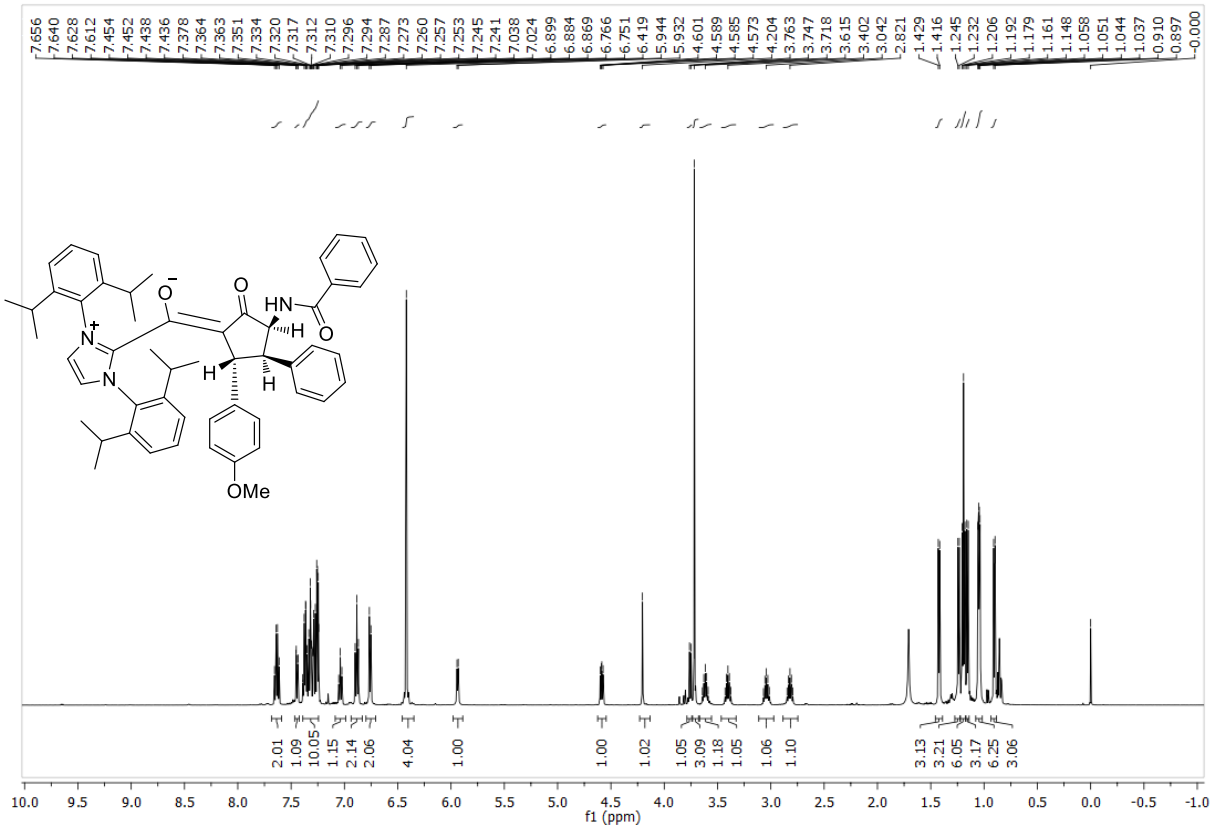


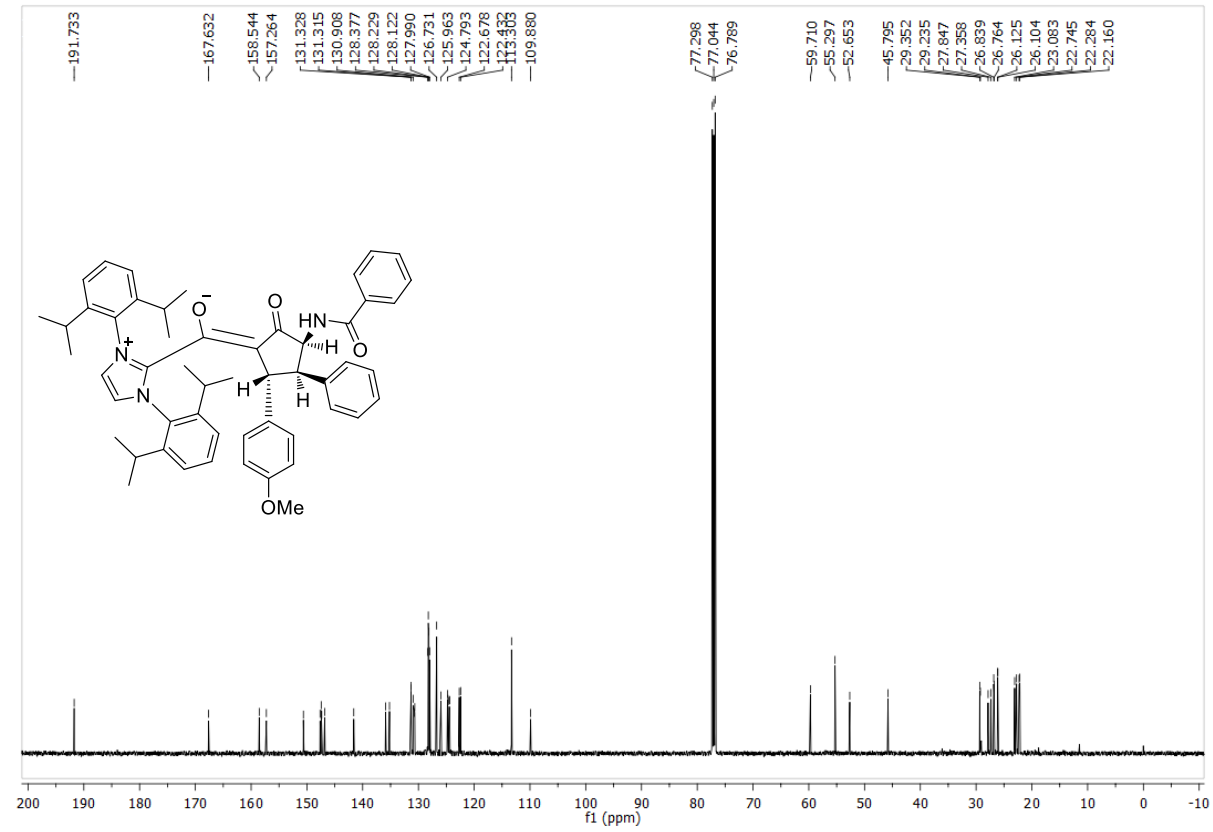
4x'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimesityl-4,5-dihydro-1H-imidazol-3-ium-2-yl)methanolate



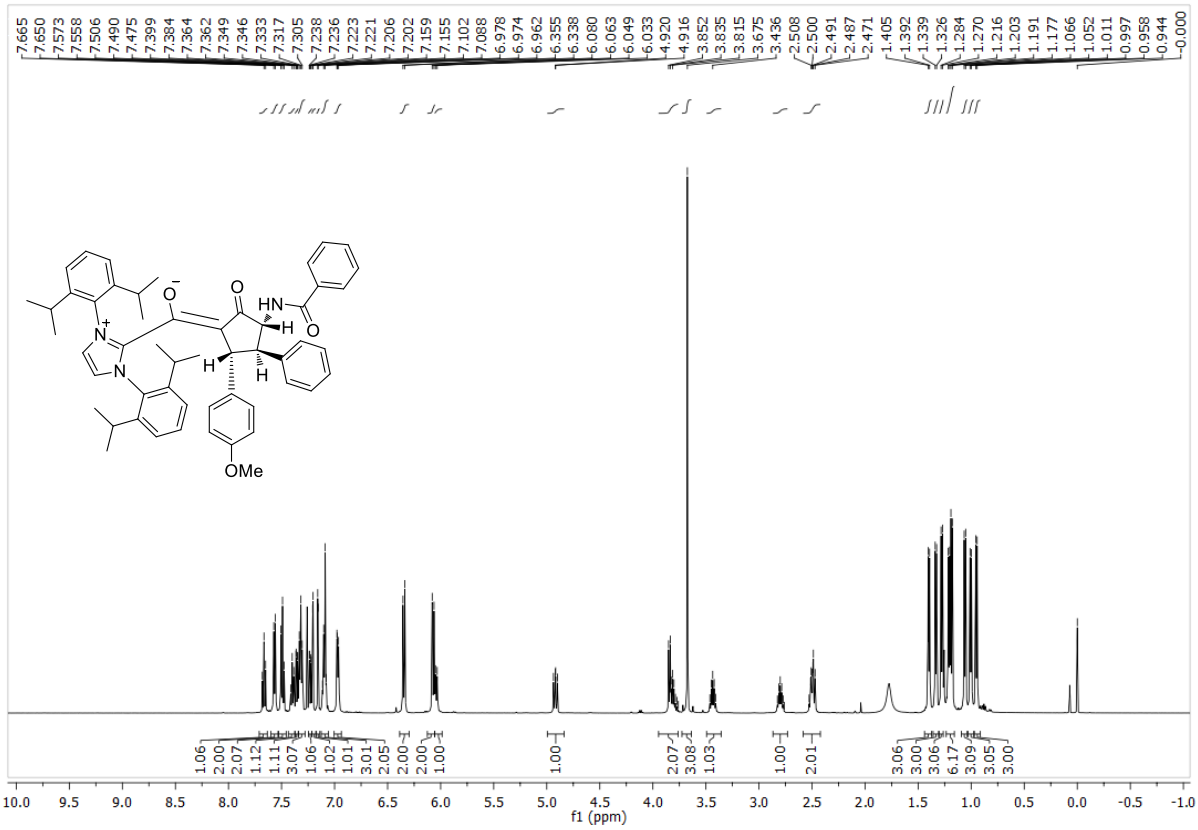


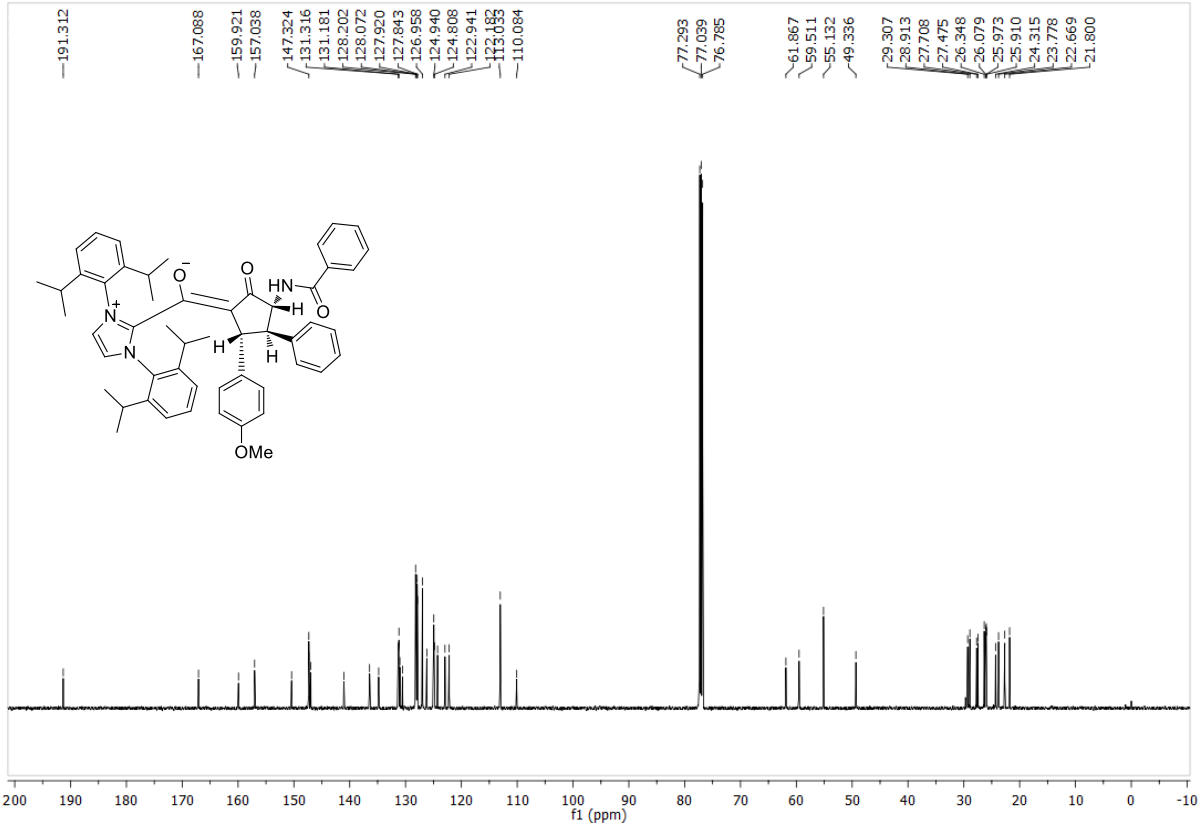
4y. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-(2,6-diisopropylphenyl)-1H-imidazol-3-ium-2-yl)methanolate



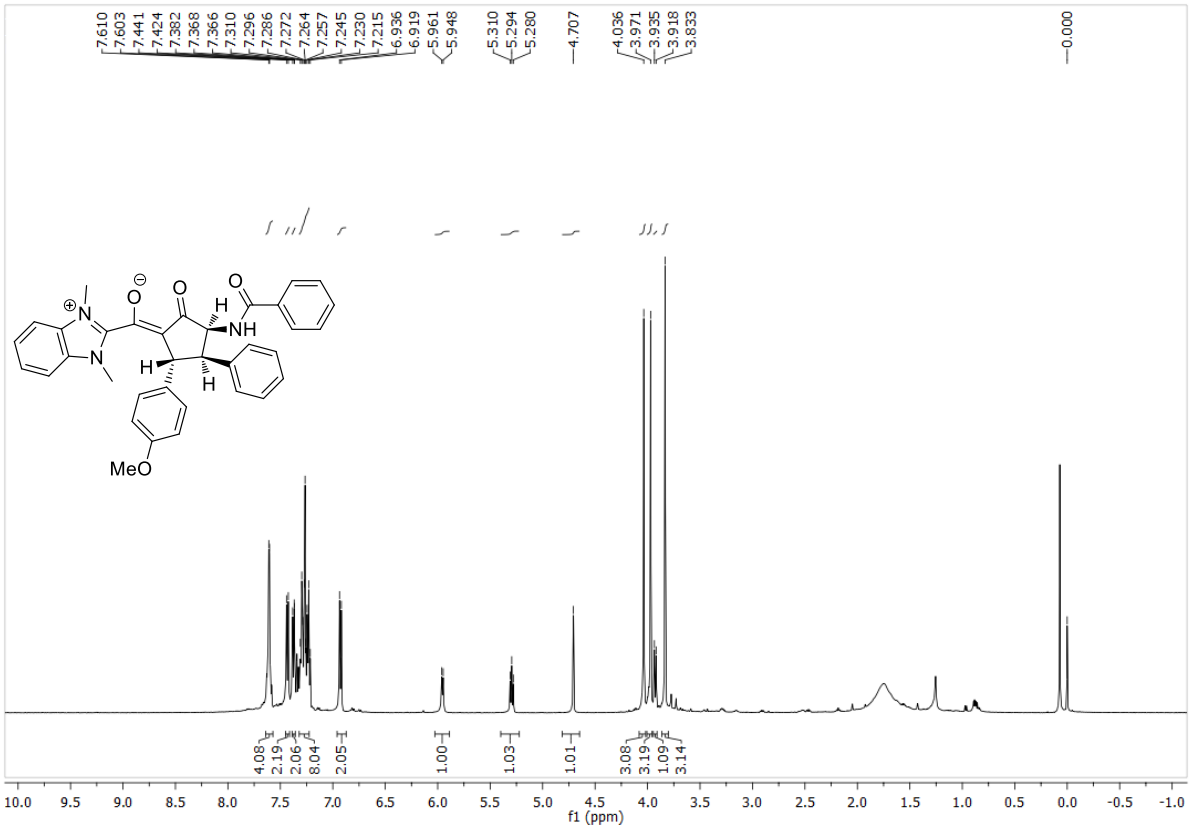


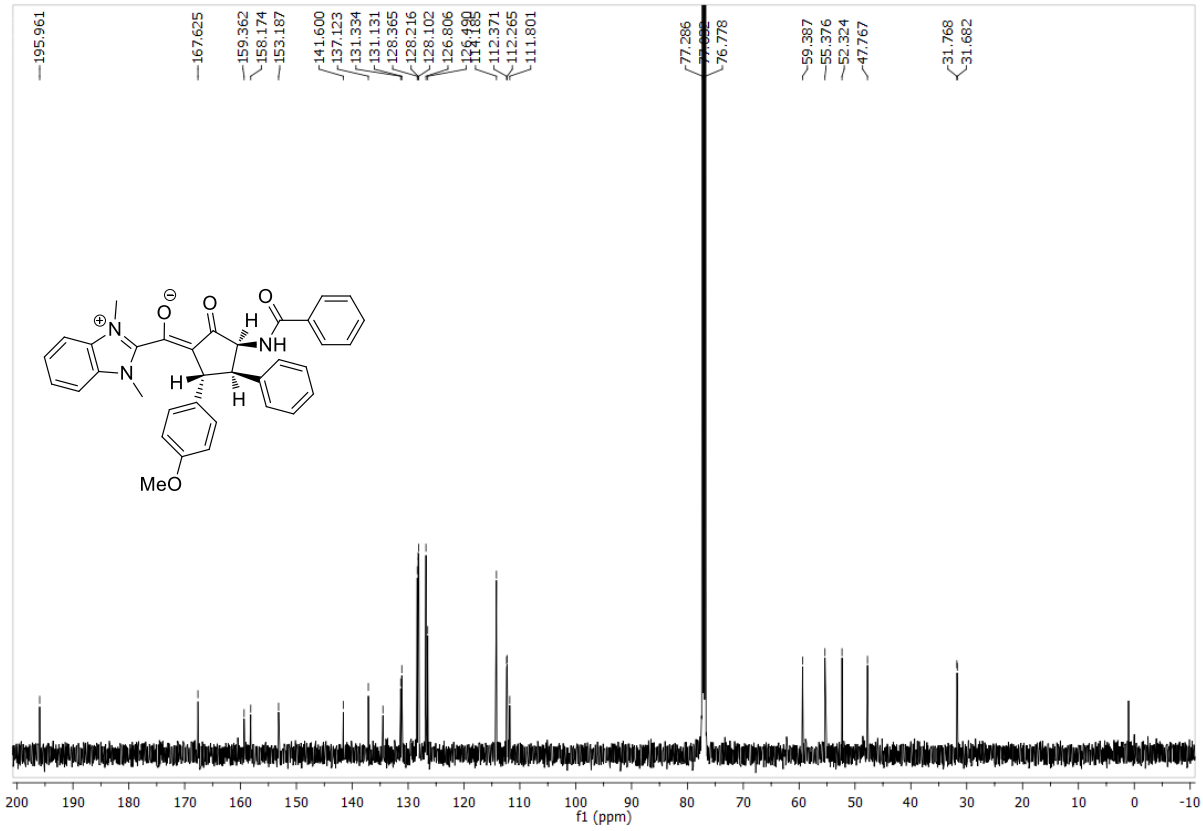
4y’. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-(2,6-diisopropylphenyl)-1H-imidazol-3-ium-2-yl)methanolate



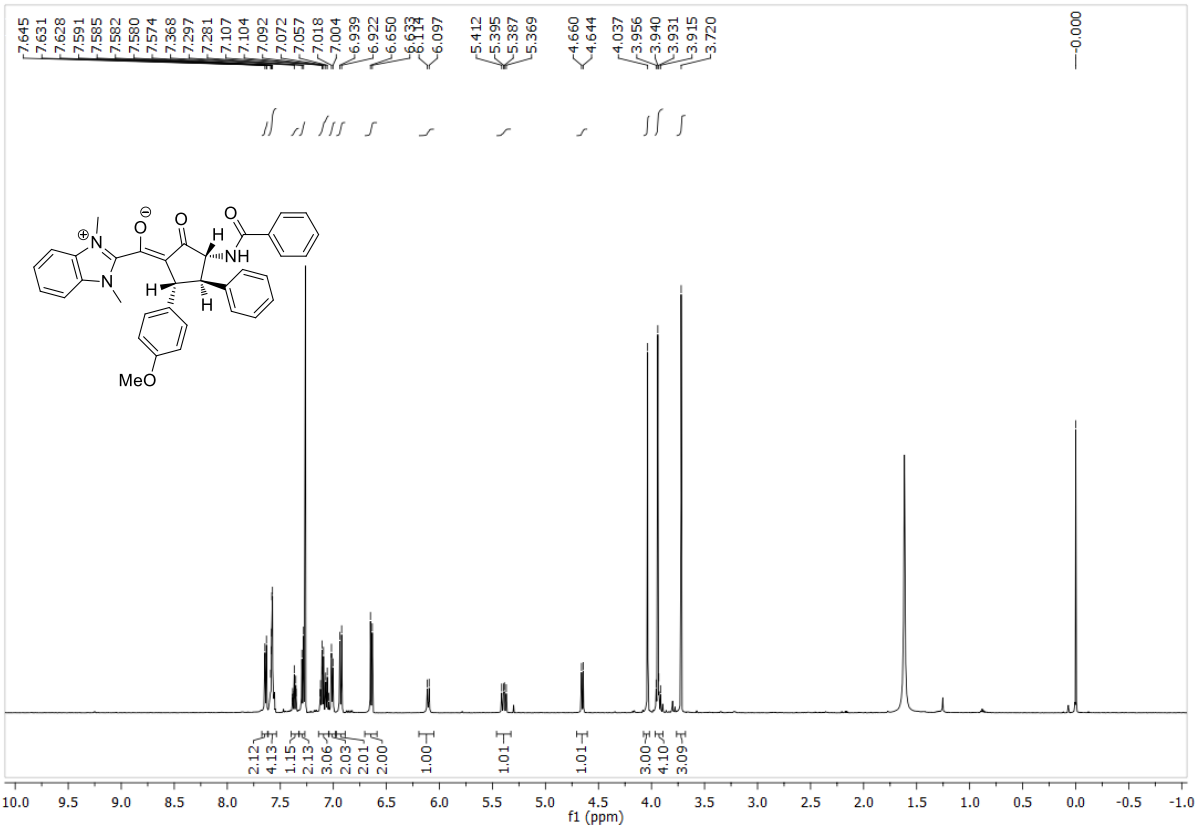


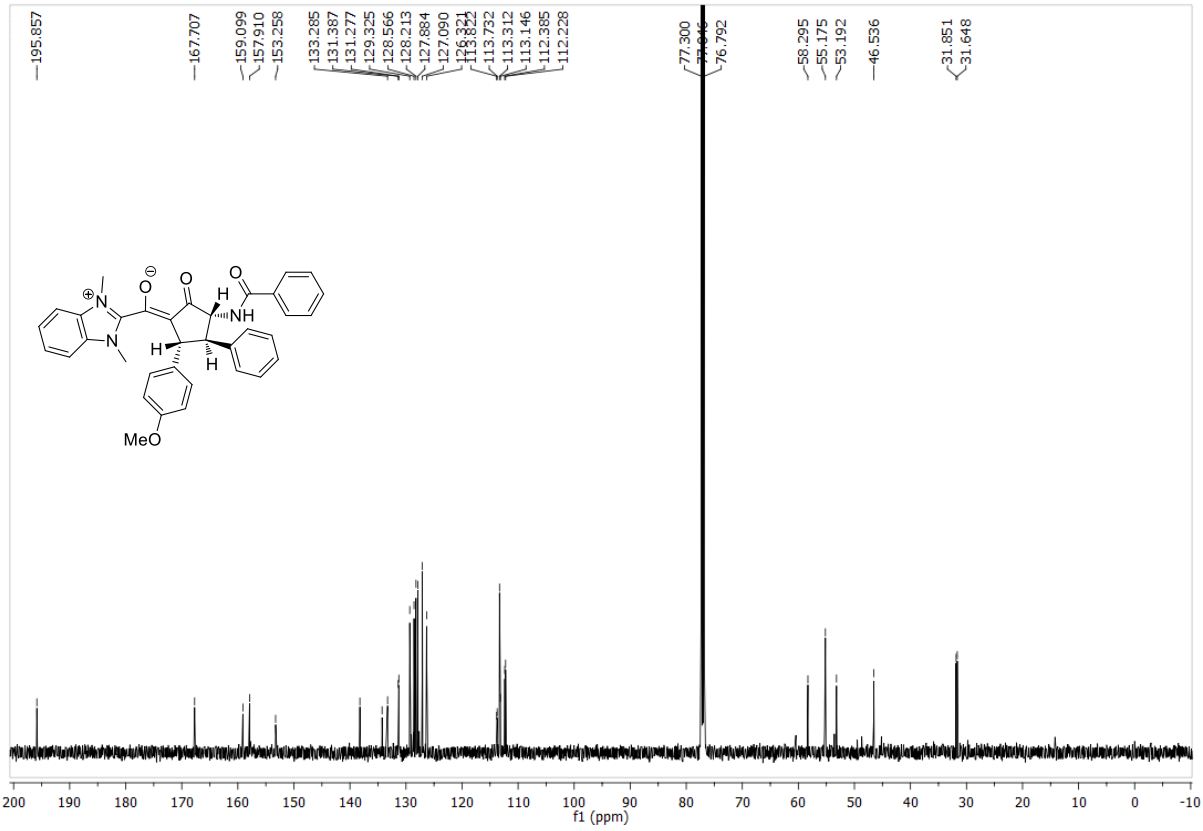
4z. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimethyl-1H-benzo[d]imidazol-3-ium-2-yl)methanolate



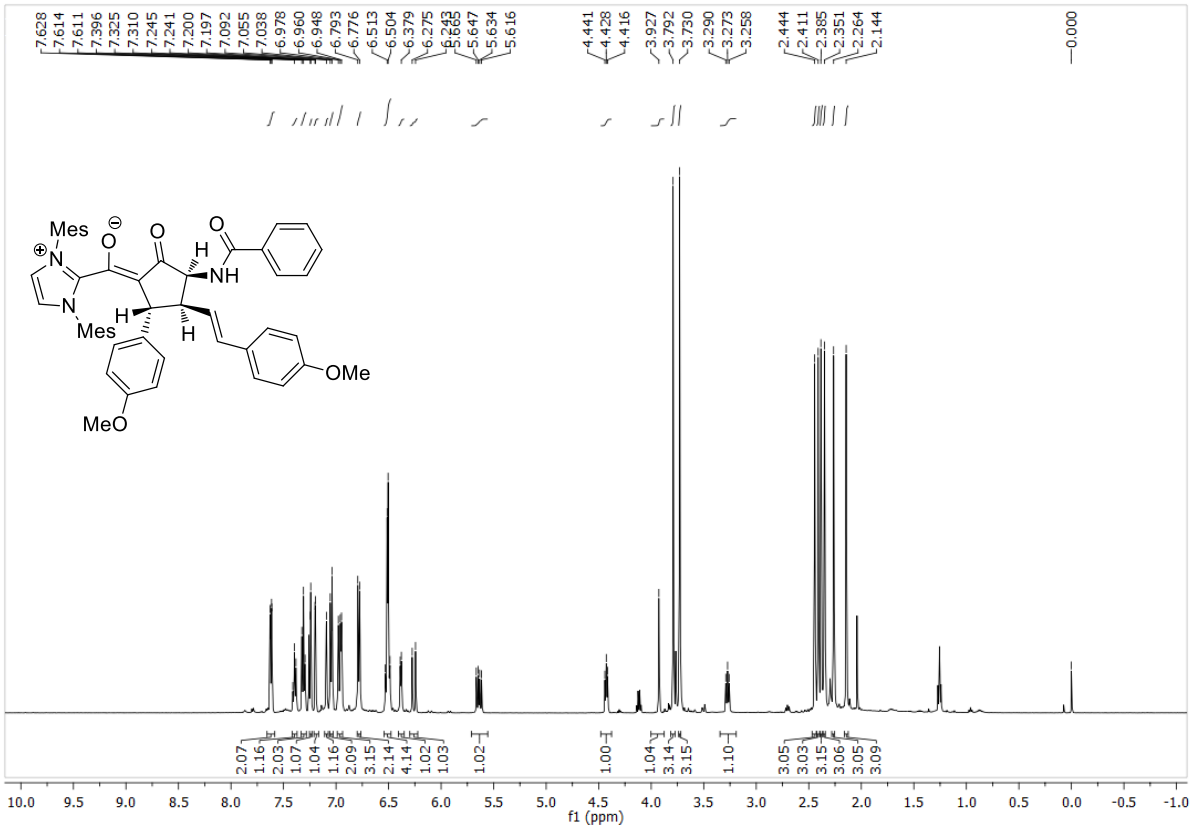


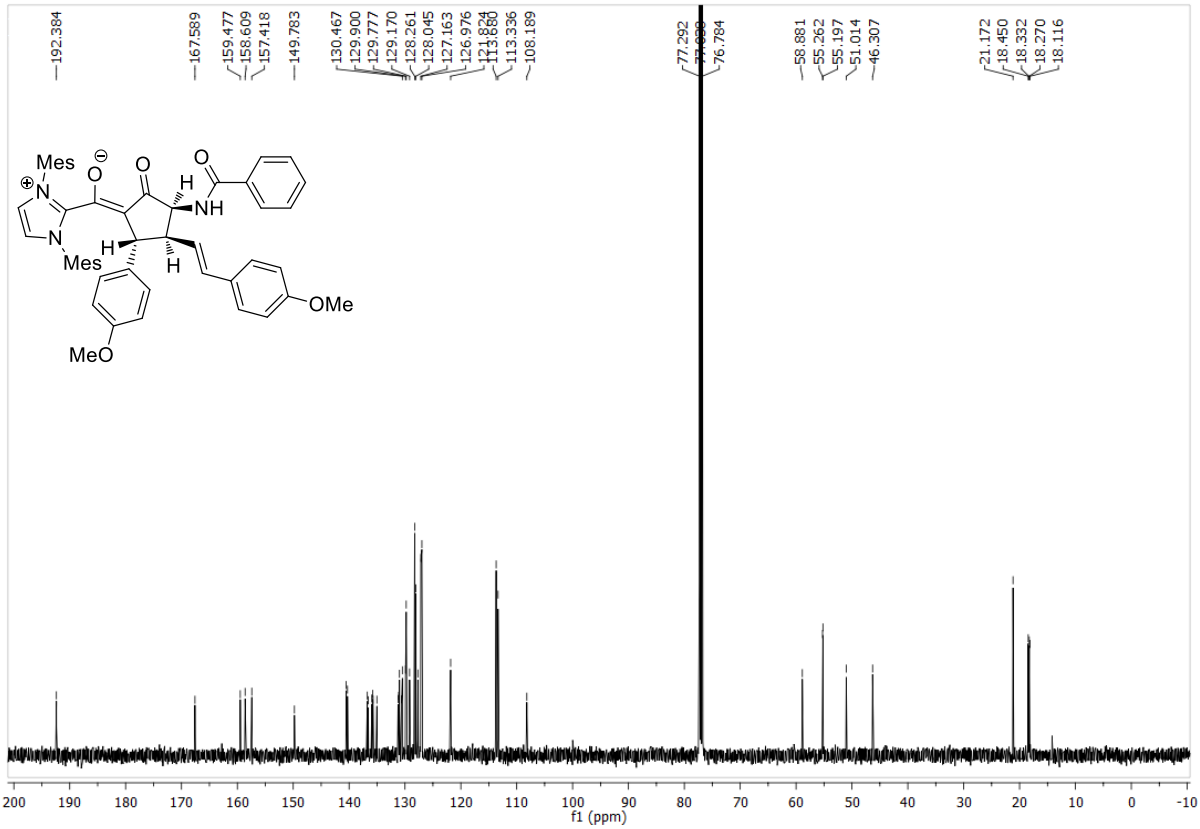
4z'. (Z)-(3-benzamido-5-(4-methoxyphenyl)-2-oxo-4-phenylcyclopentylidene)(1,3-dimethyl-1H-benzo[d]imidazol-3-ium-2-yl)methanolate



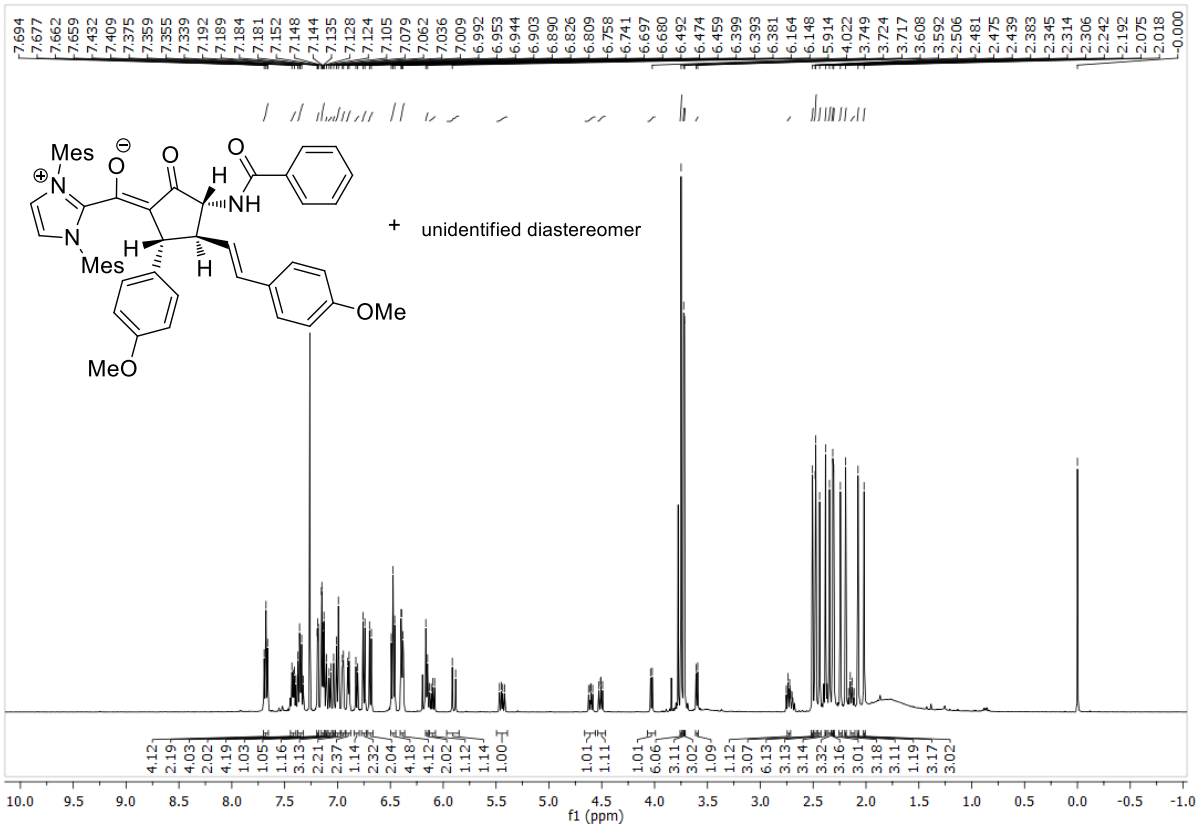


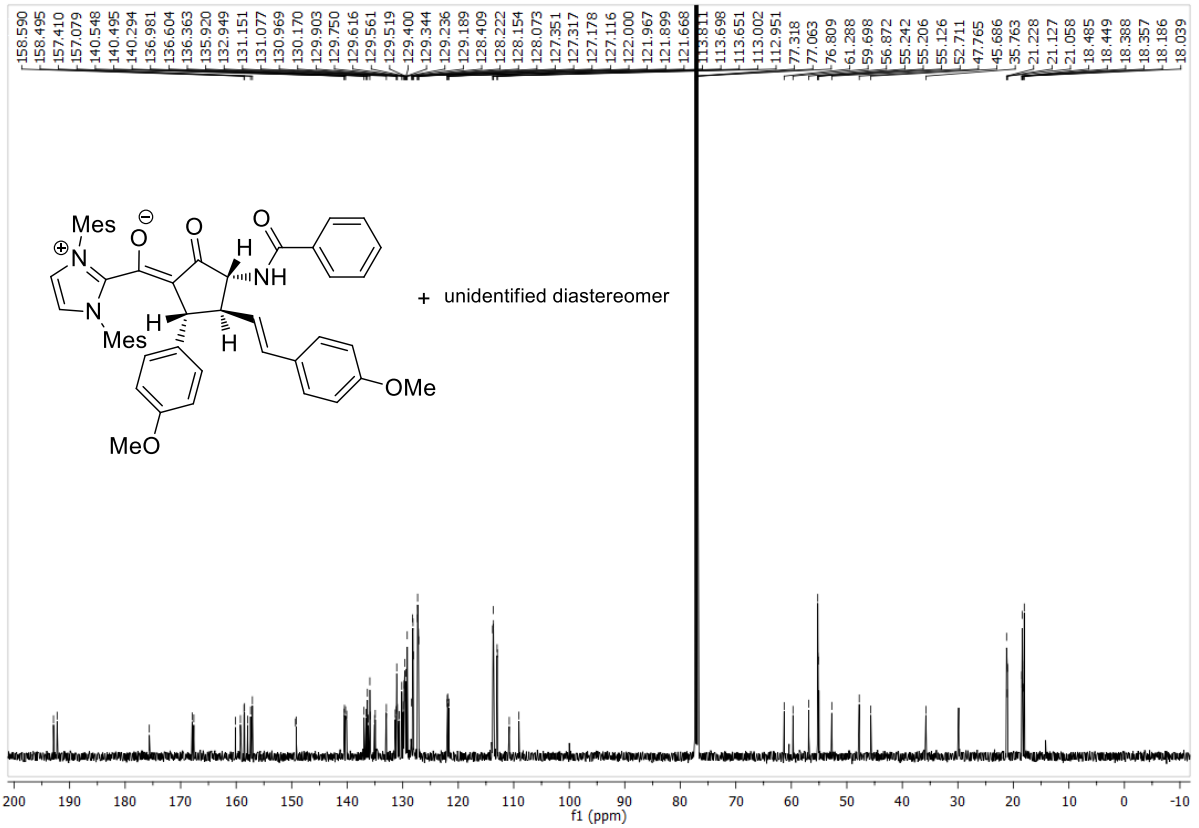
6. (Z)-(3-benzamido-5-(4-methoxyphenyl)-4-((E)-4-methoxystyryl)-2-oxocyclopentylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate





6’. (Z)-(3-benzamido-5-(4-methoxyphenyl)-4-((E)-4-methoxystyryl)-2-oxocyclopenty lidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate. (Inseparable mixture of two diasteromers)





7. (Z)-(1-benzoyl-3-iodo-2,4-bis(4-methoxyphenyl)-6-oxohexahydrocyclopenta[b]pyrrol-5(1H)-ylidene)(1,3-dimesityl-1H-imidazol-3-ium-2-yl)methanolate