

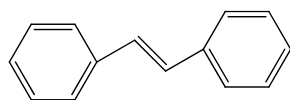
The fabrication of palladium-pyridyl complex multilayers and their application as a catalyst for the Heck reaction

Shuiying Gao, Yuanbiao Huang, Minna Cao, Tian-fu Liu and Rong Cao*

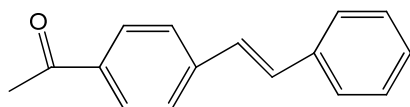
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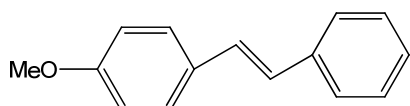
Analytical data for the products of the Heck reaction:



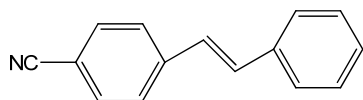
trans-stilbene: ^1H NMR (400MHz, CDCl_3): δ 7.11 (s, 2H), 7.24-7.28 (m, 2H), 7.36 (t, $J=7.6\text{Hz}$, 4H), 7.49-7.55 (m, 4H); ^{13}C NMR (100MHz, CDCl_3): δ 126.51, 127.62, 128.68, 128.69, 137.33.



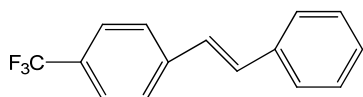
4-acetyl-*trans*-stilbene: ^1H NMR (400 MHz, CDCl_3) δ 2.64 (s, 3H), 7.16 (d, $J = 16.3$ Hz, 1H), 7.24-7.28 (m, 1H), 7.33 (t, $J = 7.3$ Hz, 1H), 7.41 (t, $J = 7.5$ Hz, 2H), 7.63-7.56 (m, 4H), 7.98 (d, $J = 8.4$ Hz, 2H). ^{13}C NMR (100MHz, CDCl_3): δ 26.60, 126.5, 126.82, 127.45, 128.33, 128.81, 128.89, 131.41, 135.96, 136.70, 142.0, 197.49.



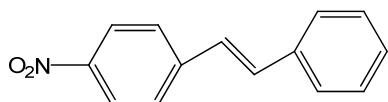
4-methoxy-*trans*-stilbene: ^1H NMR (400MHz, CDCl_3): δ 3.86 (s, 3H), 6.93 (d, $J = 11.7$ Hz, 2H), 7.05 (m, 2H), 7.21-7.32(m, 1H), 7.37 (t, $J = 7.6$ Hz, 2H), 7.50 (m, 4H); ^{13}C NMR (100MHz, CDCl_3): δ 55.33, 114.1, 126.25, 126.62, 127.25, 127.71, 128.21, 128.64, 130.19, 137.65, 159.30.



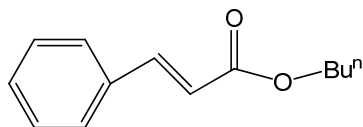
trans-stilbene-4-carbonitrile: ^1H NMR (400MHz, CDCl_3): δ 7.12 (d, $J = 16.3\text{Hz}$, 1H), 7.20-7.30(m, 1H), 7.35 (t, $J = 7.3$ Hz, 1H), 7.42 (t, $J = 7.5$ Hz, 2H), 7.52-7.71 (m, 6H); ^{13}C NMR (100MHz, CDCl_3): δ 110.59, 119.04, 126.73, 126.87, 126.92, 128.65, 128.86, 132.41, 132.50, 136.29, 141.84.



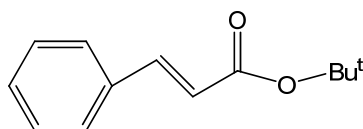
4-trifluoromethyl-*trans*-stilbene: ^1H NMR (400MHz, CDCl_3): δ 7.15 (d, $J = 16.3$ Hz, 1H), 7.23 (d, $J = 16.4$ Hz, 1H), 7.33 (t, $J = 7.3$ Hz, 1H), 7.41 (t, $J = 7.5$ Hz, 2H), 7.56 (d, $J = 7.5$ Hz, 2H) 7.63 (s, 4H); ^{13}C NMR (100MHz, CDCl_3): δ 125.62, 125.65, 126.57, 126.77, 127.13, 128.29, 128.8, 131.21, 136.63, 140.81.



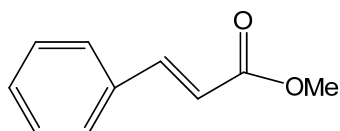
4-nitro-*trans*-stilbene: ^1H NMR (400MHz, CDCl_3): δ 7.17 (d, $J = 16.3$ Hz, 1H), 7.30 (d, $J = 16.3$ Hz, 1H), 7.36 (t, $J = 7.3$ Hz, 1H), 7.43 (t, $J = 7.4$ Hz, 2H), 7.58 (d, $J = 7.2$ Hz, 2H), 7.66 (d, $J = 8.8$ Hz, 2H), 8.25 (d, $J = 8.8$ Hz, 2H); ^{13}C NMR (100MHz, CDCl_3) δ 124.15, 126.30, 126.86, 127.02, 128.84, 128.90, 133.32, 136.19, 143.88, 146.80.



trans-cinnamic acid n-butyl ester: ^1H NMR (400MHz, CDCl_3): δ 0.99 (t, $J = 7.4$ Hz, 3H), 1.38-1.58 (m, 2H), 1.64-1.83(m, 2H), 4.23 (t, $J = 6.7$ Hz, 2H), 6.46 (d, $J = 16.0$ Hz, 1H), 7.33-7.47 (m, 3H), 7.50-7.60 (m, 2H), 7.71 (d, $J = 16.0$ Hz, 1H); ^{13}C NMR (100MHz, CDCl_3): δ 13.90, 19.38, 30.90, 64.55, 118.42, 128.04, 128.86, 130.18, 134.60, 144.52, 167.12.



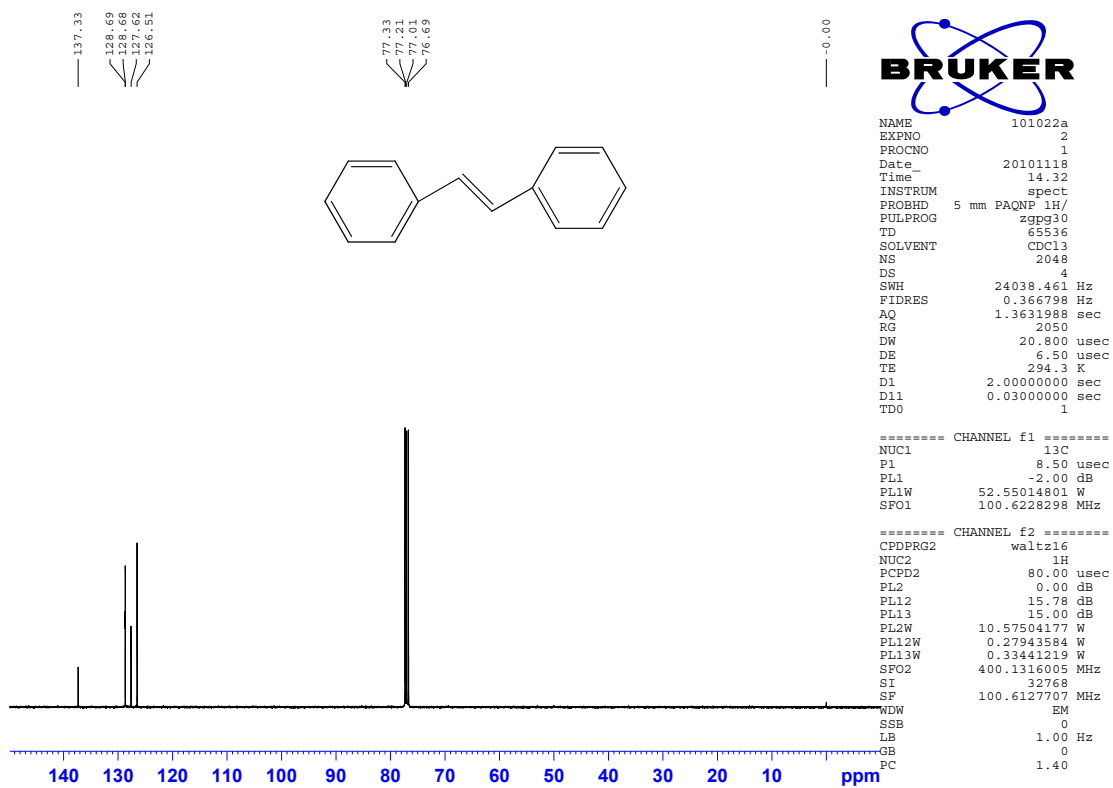
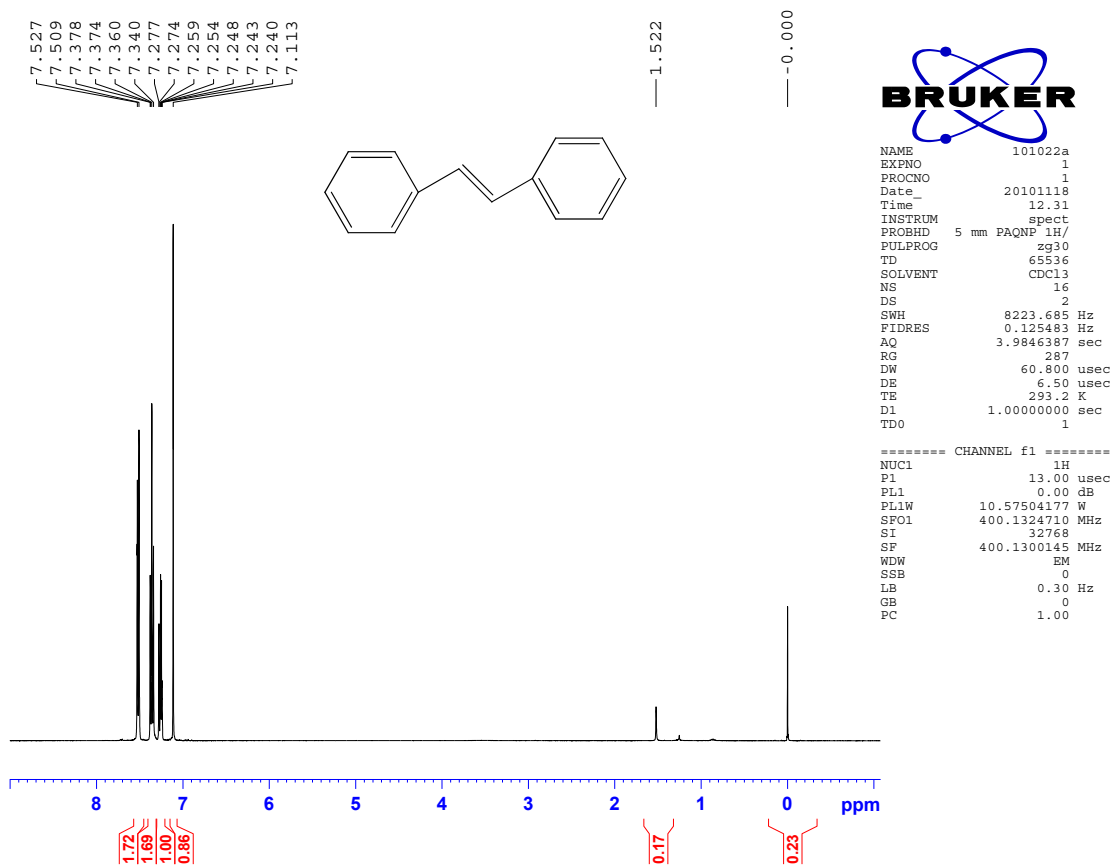
trans-cinnamic acid t-butyl ester: ^1H NMR (400 MHz, CDCl_3) δ 1.57 (s, 9H), 6.40 (d, $J = 16.0$ Hz, 1H), 7.37 (s, 3H), 7.52 (s, 2H), 7.62 (d, $J = 16.0$ Hz, 1H). ^{13}C NMR (100MHz, CDCl_3): δ 28.22, 80.42, 120.22, 127.94, 128.81, 129.94, 134.68, 143.52, 166.26

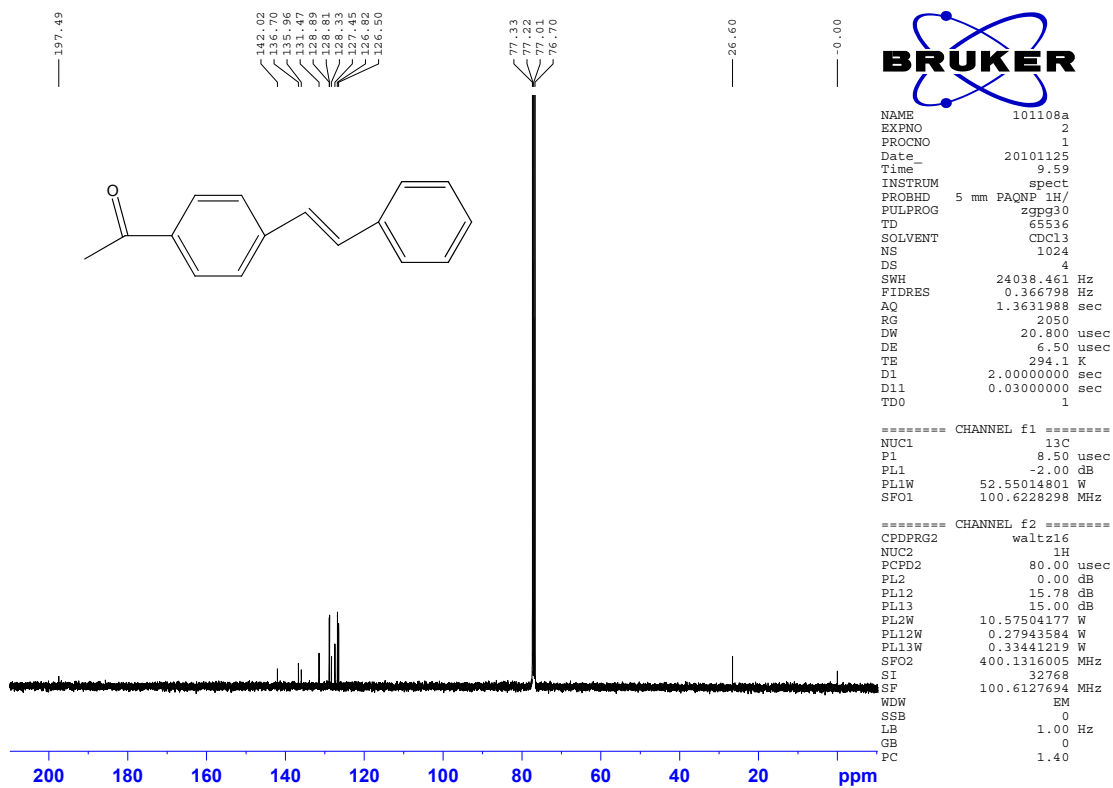
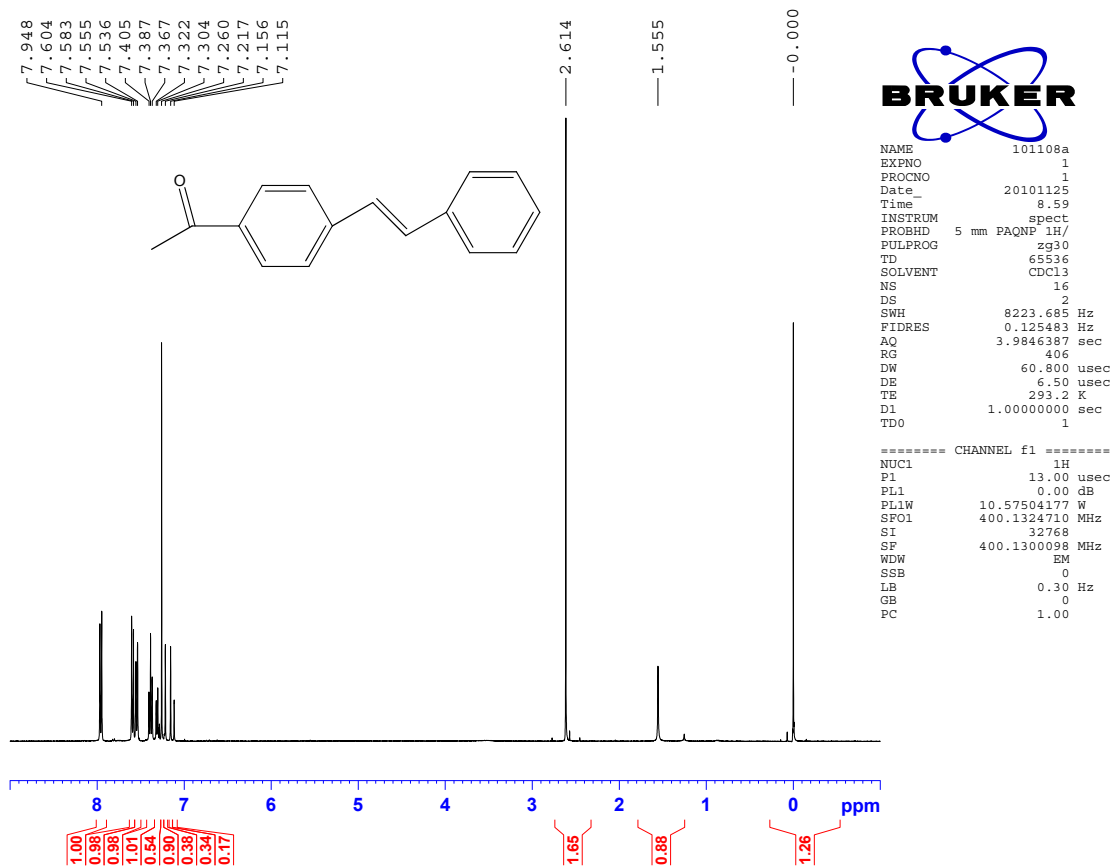


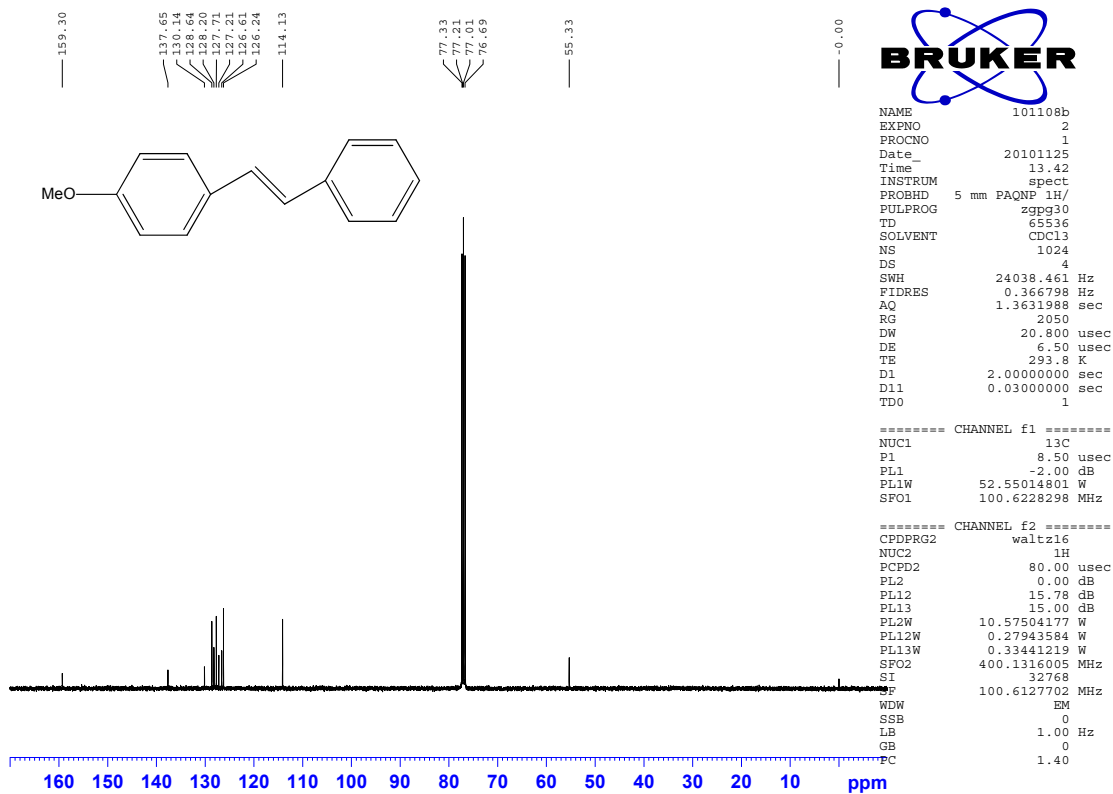
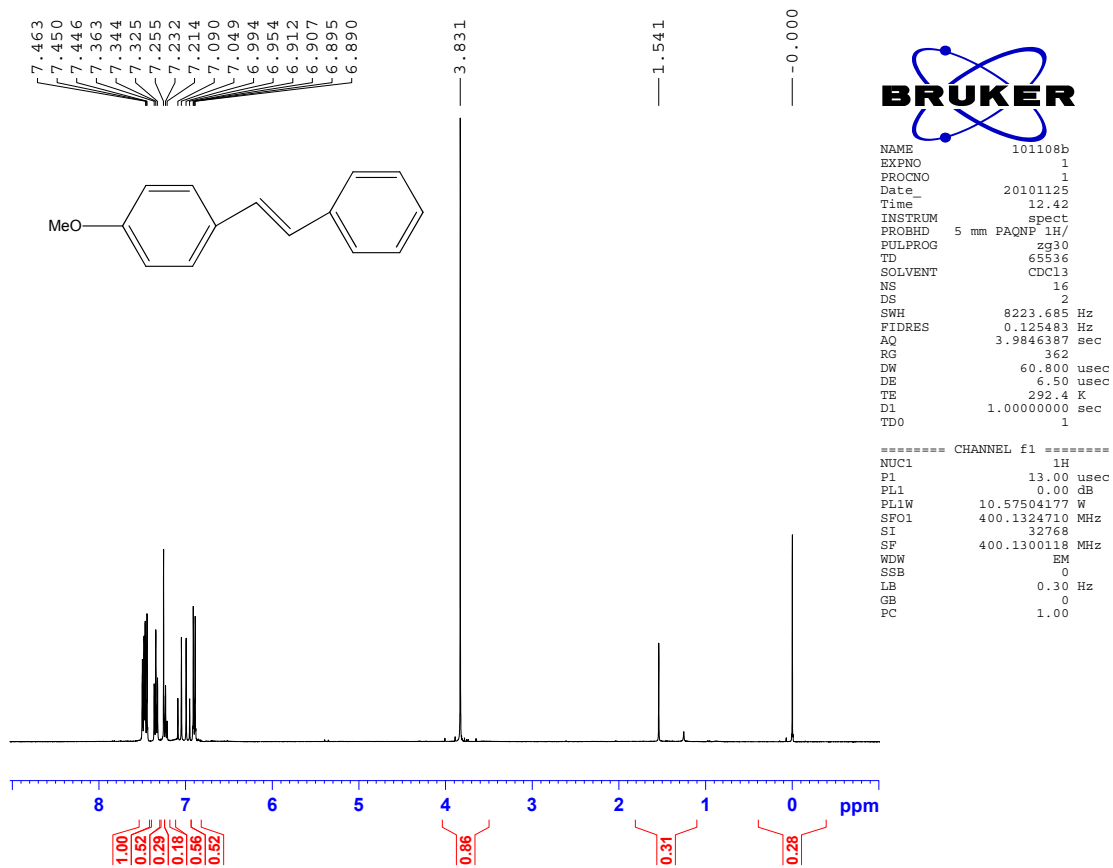
trans-cinnamic acid methyl ester: ^1H NMR (400 MHz, CDCl_3) δ 3.80 (s, 3H), 6.44 (d, $J = 16.0$ Hz, 1H), 7.32-7.46 (m, 3H), 7.44-7.62 (m, 2H), 7.69(d, $J = 16.0$ Hz, 1H). ^{13}C NMR (100MHz, CDCl_3): δ 51.69, 117.84, 128.08, 128.90, 130.30, 134.42, 144.88, 167.42

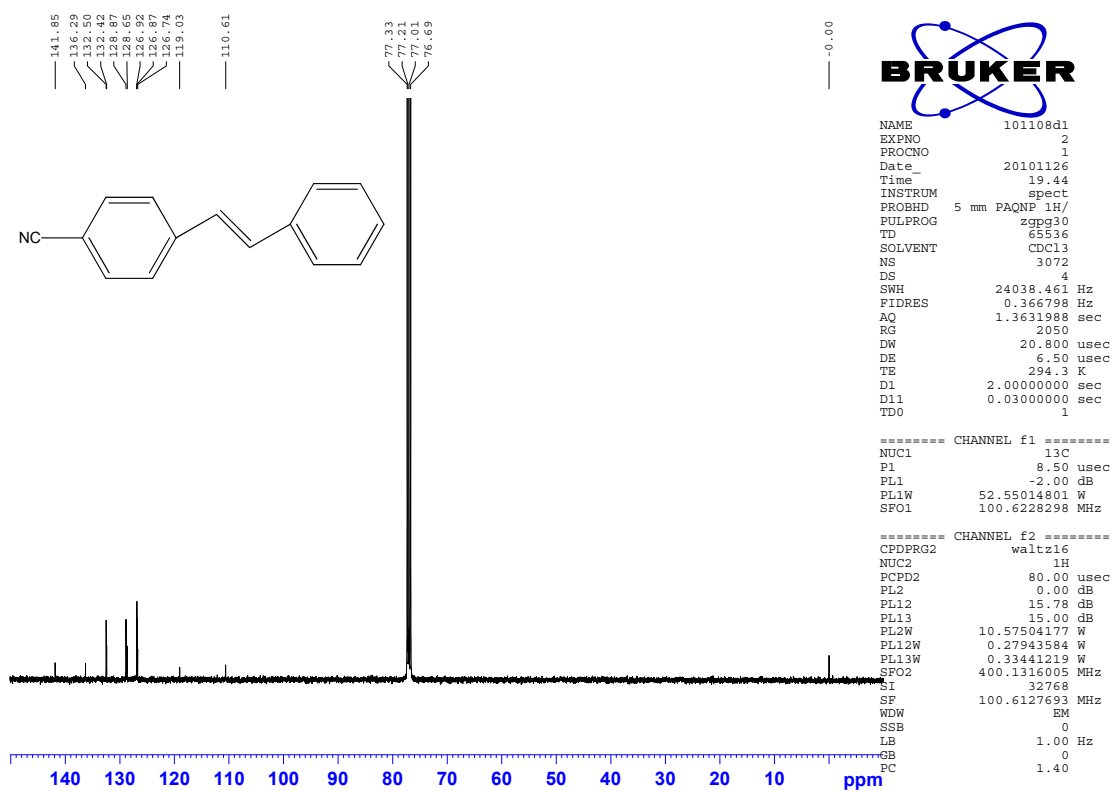
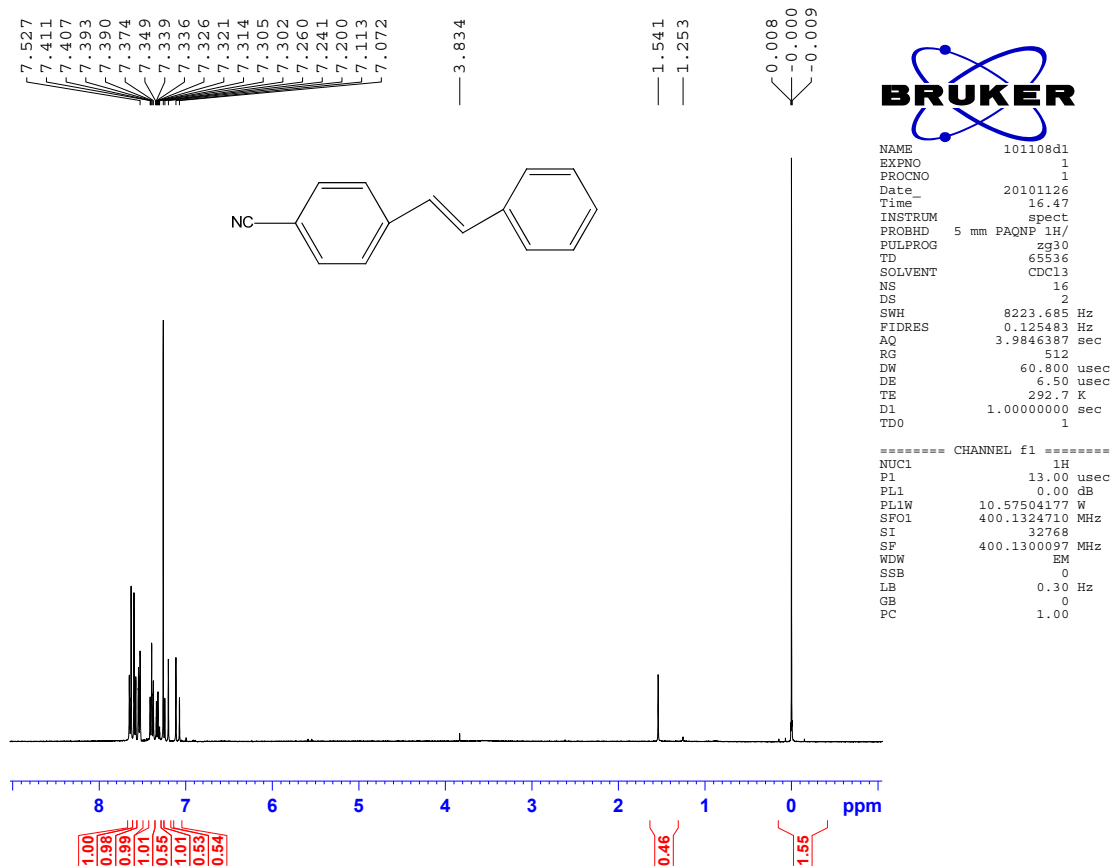
References

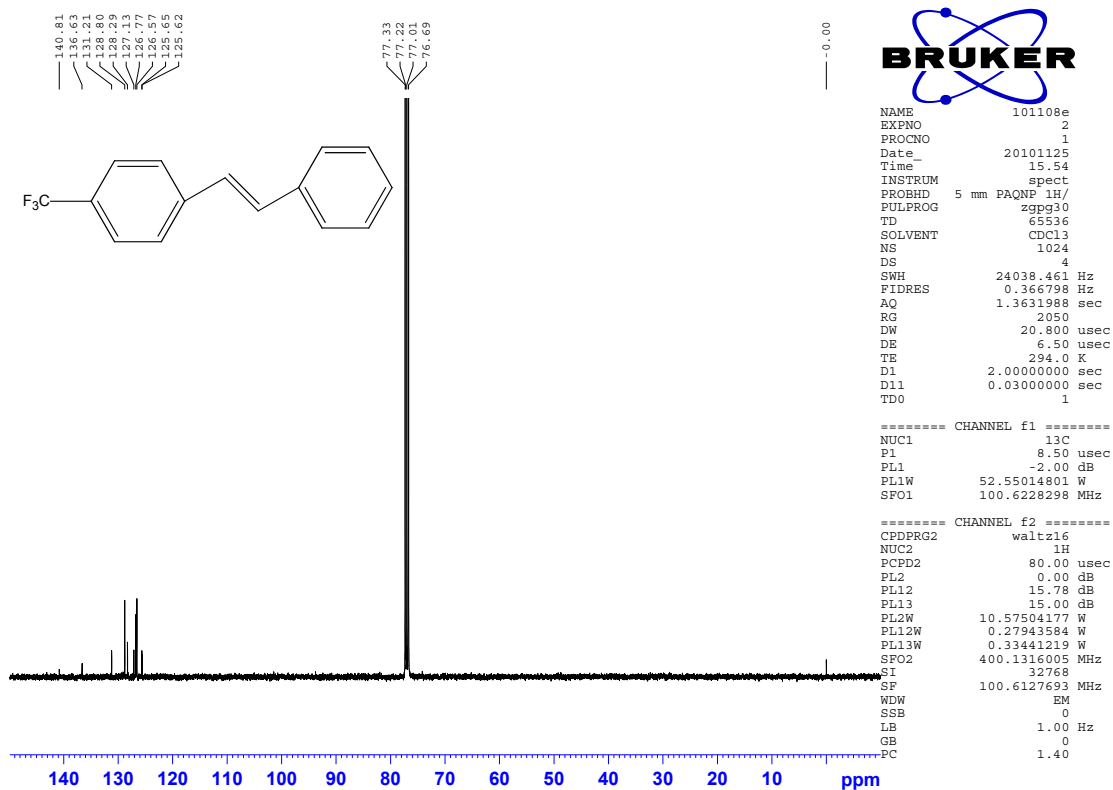
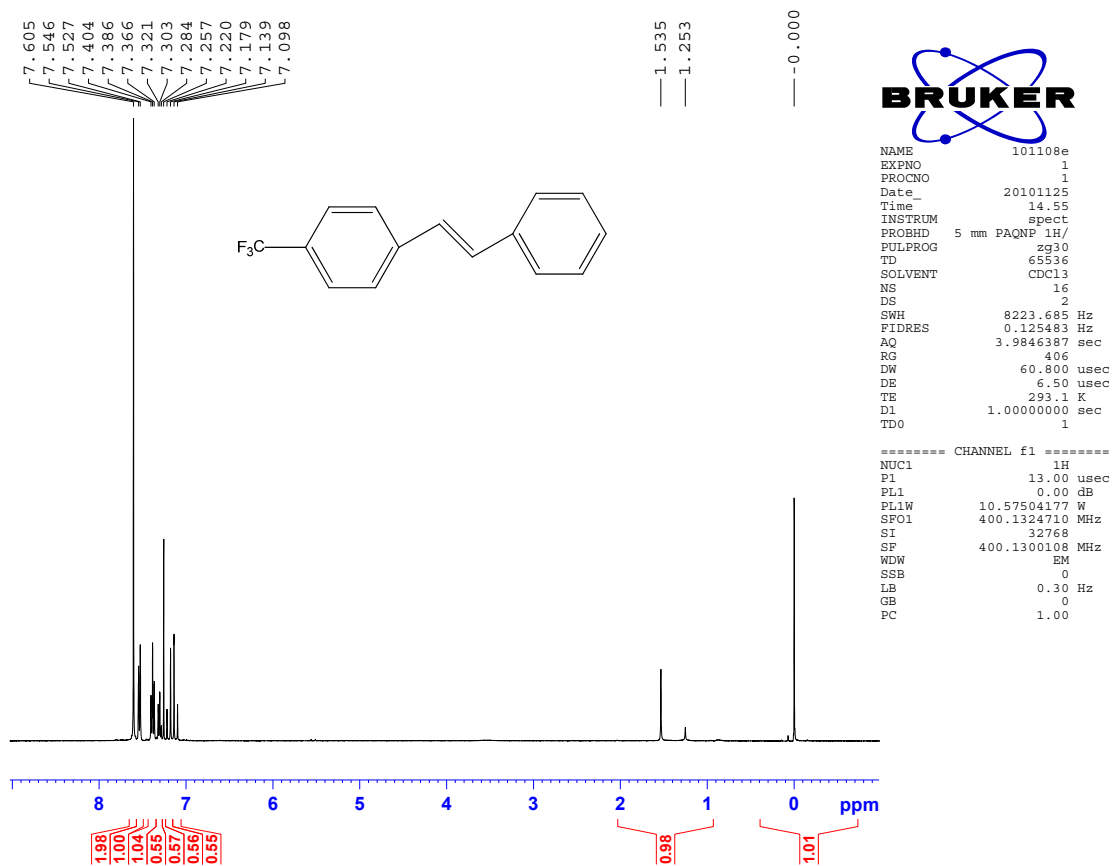
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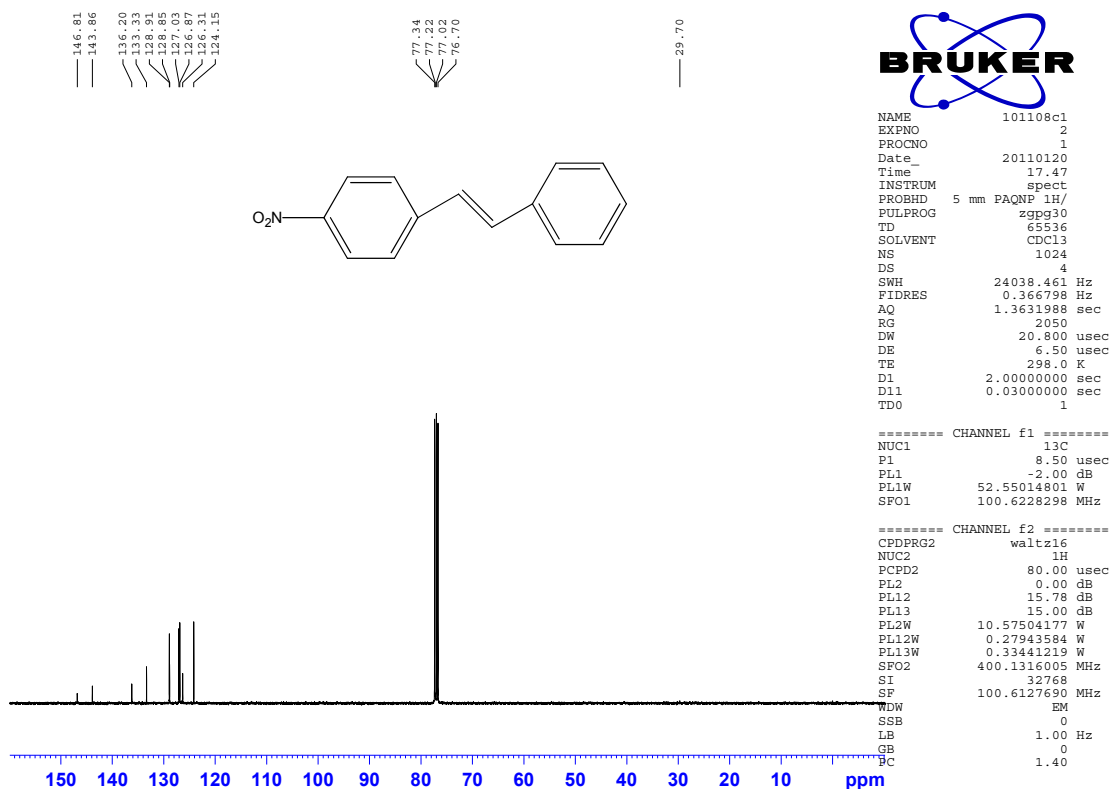
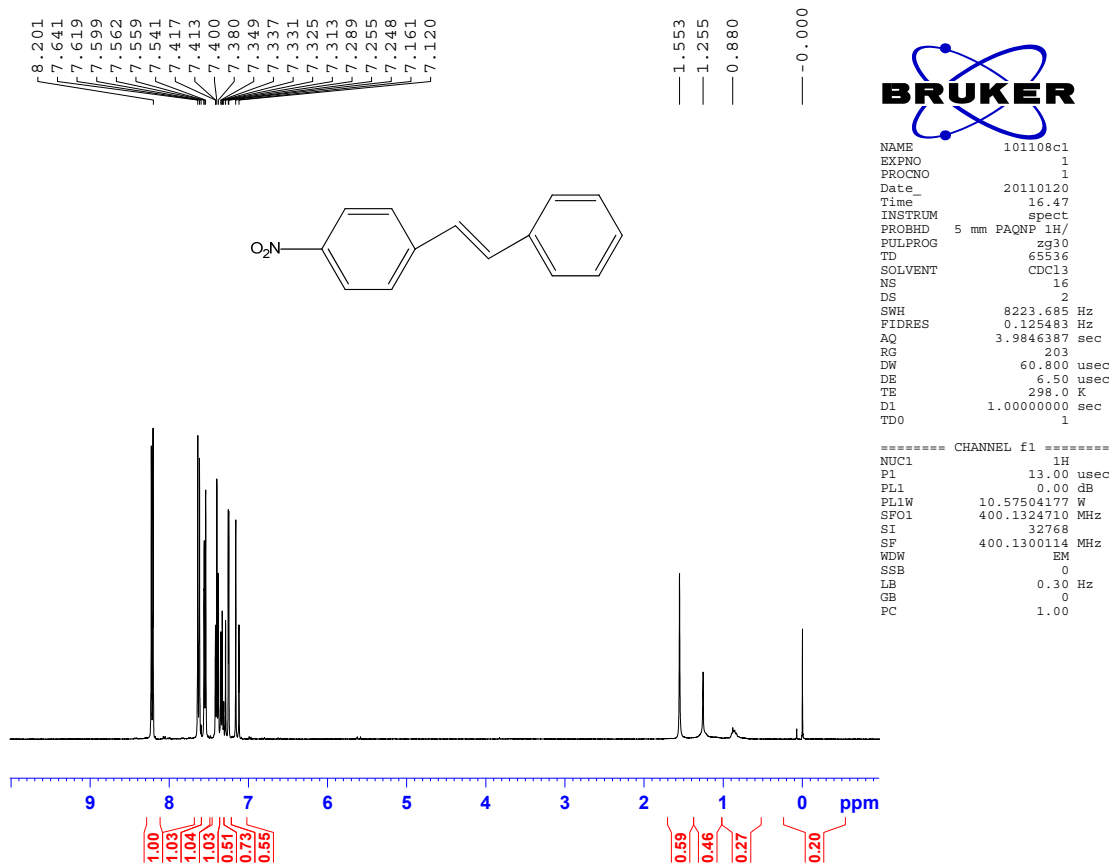


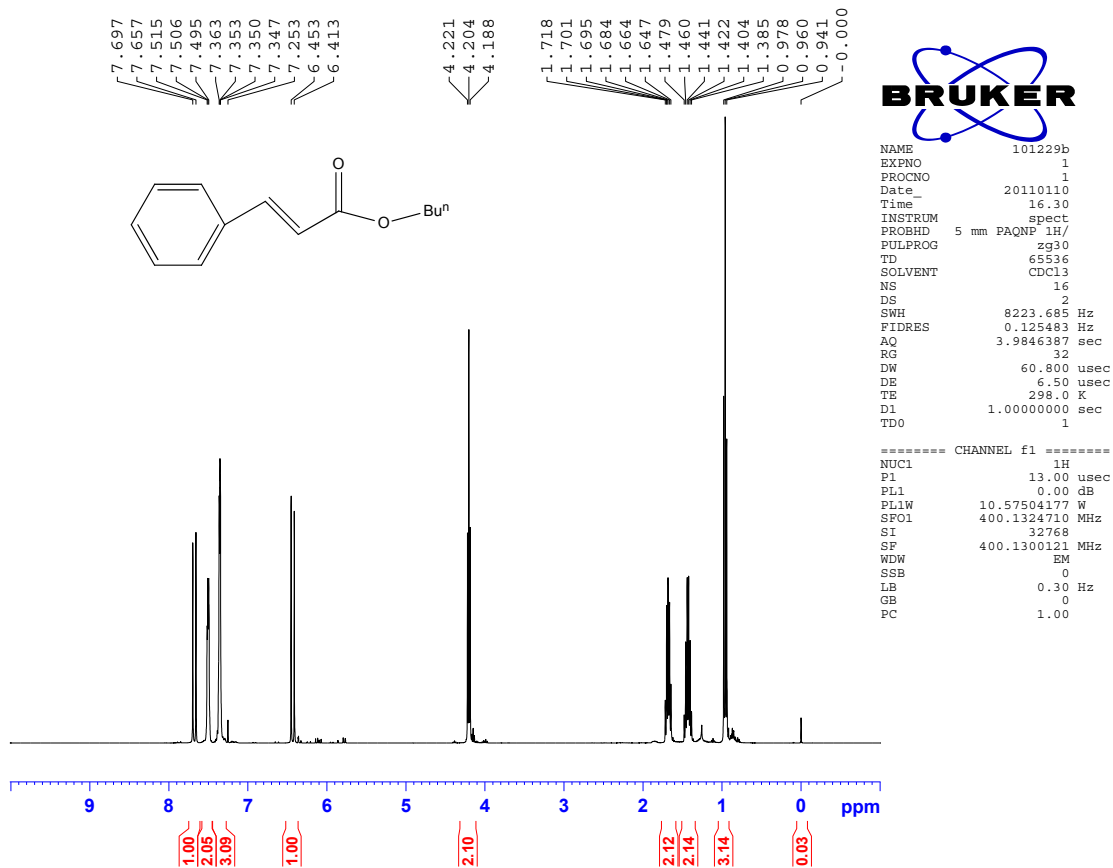






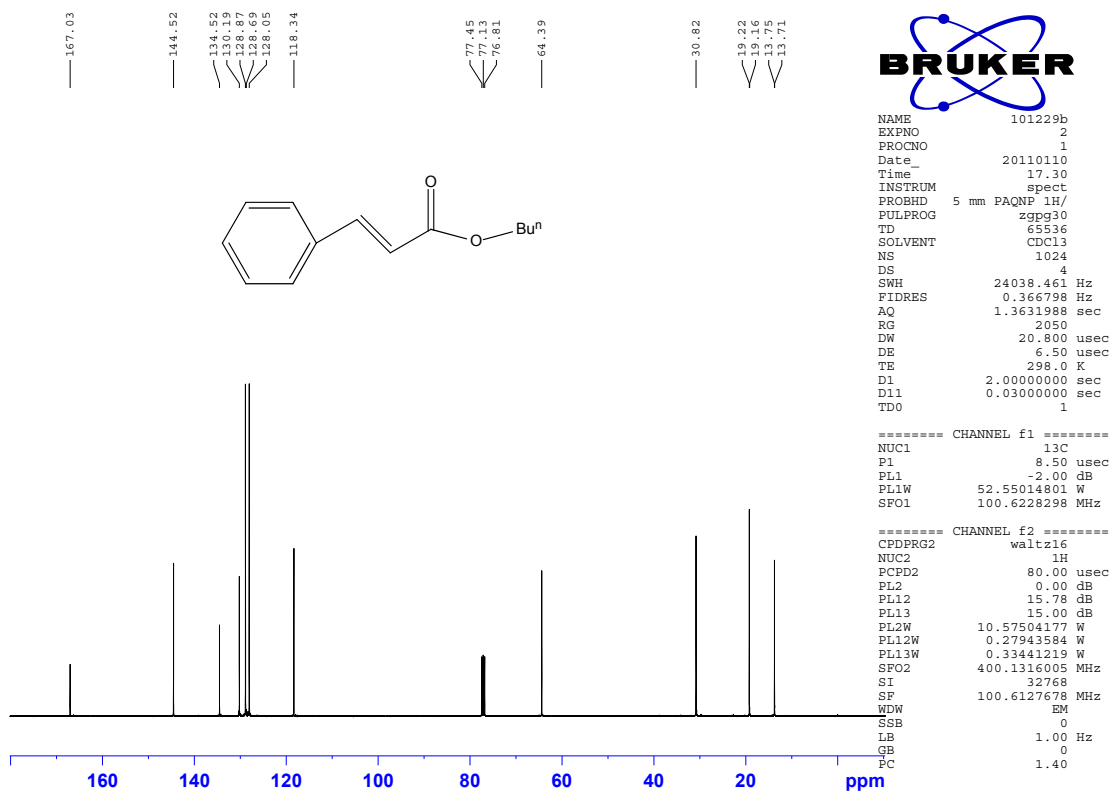






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