

Electronic Supporting Information

Metformin as a versatile ligand for recyclable palladium-catalyzed cross-coupling reactions in neat water

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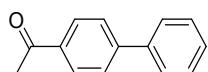
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Compounds were purified by flash chromatography using an eluent gradient from 100% hexane to 80/20 hexane/ ethyl acetate .

¹H and ¹³C NMR spectra were recorded on Advance 400 MHz Bruker spectrometer. Chemical shifts are reported in ppm with internal reference to TMS. High-resolution mass spectra (HRMS) were recorded on a TSQ Quantum Ultra (Thermo Scientific) with accurate mass options instrument (Université de Montréal Mass Spectrometry Facility).

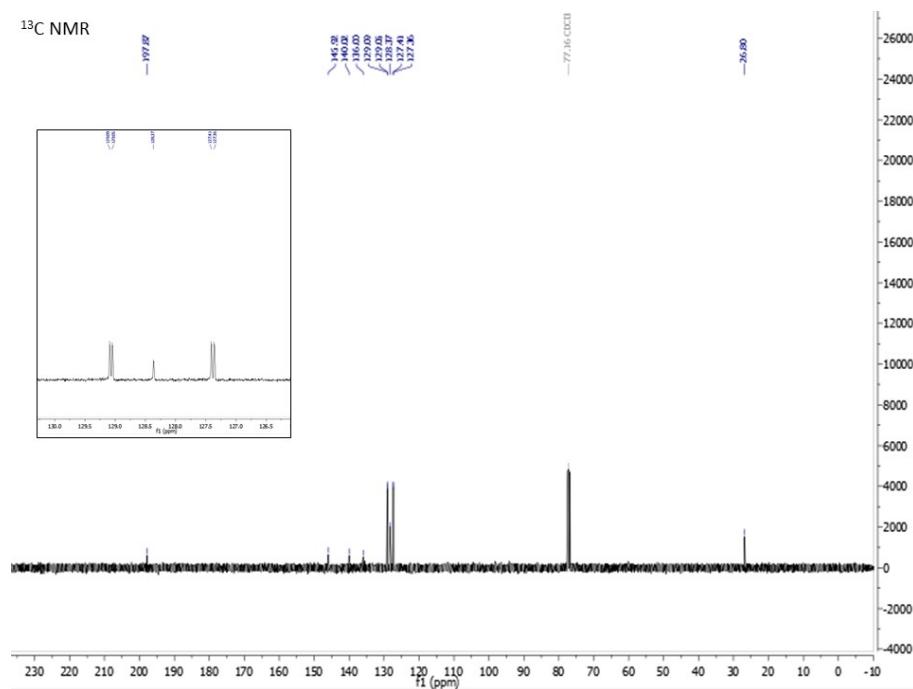
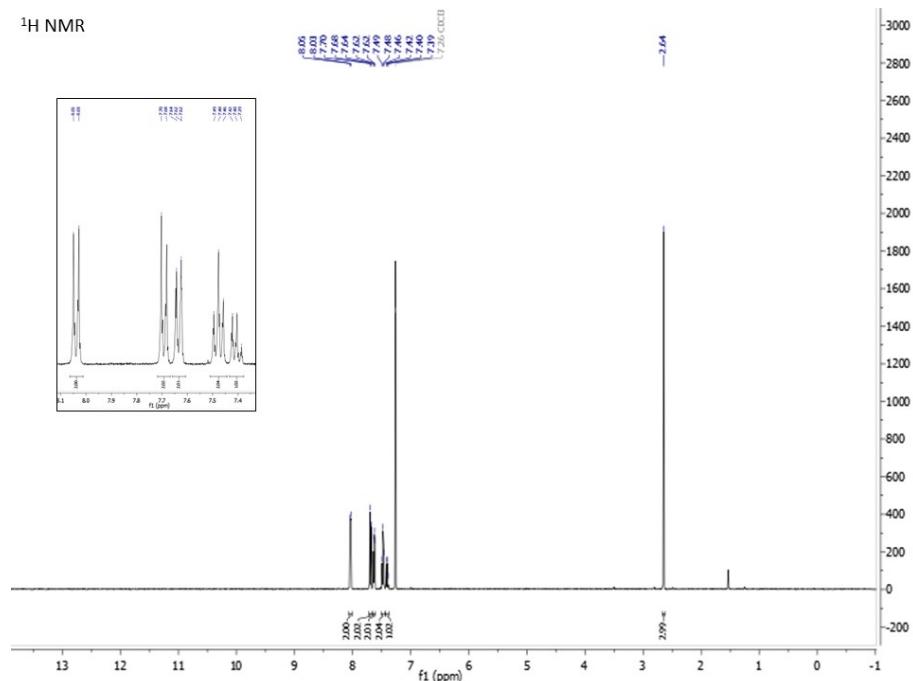
Suzuki-Miyaura substrates scope characterization

Entries 1,2

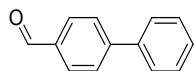


White powder

HRMS: $C_{14}H_{13}O^+$ [M+H]⁺, calcd: 197.09609, found: 197.09550, diff. (ppm): 2.99

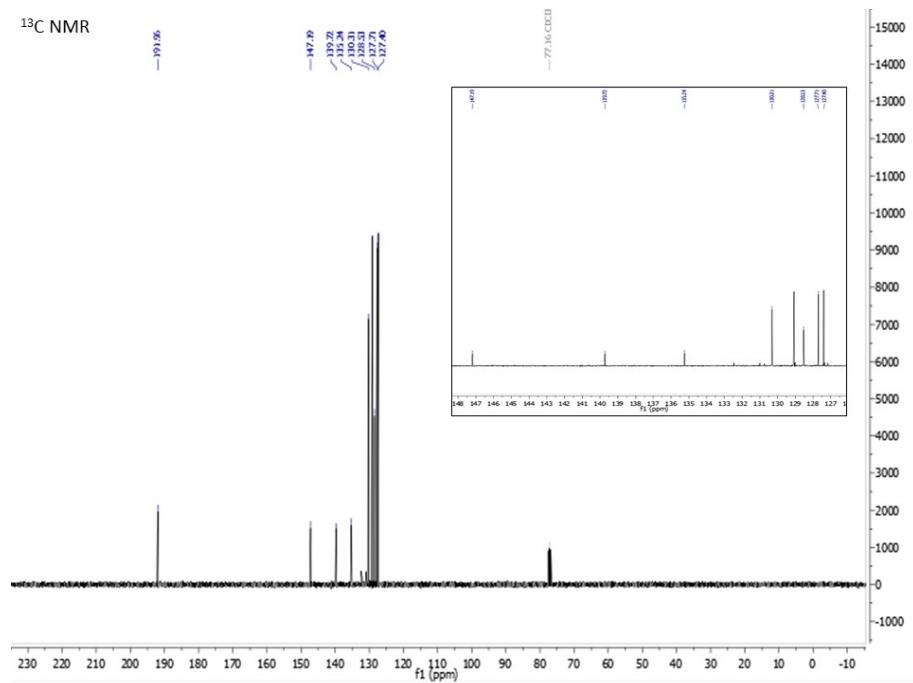
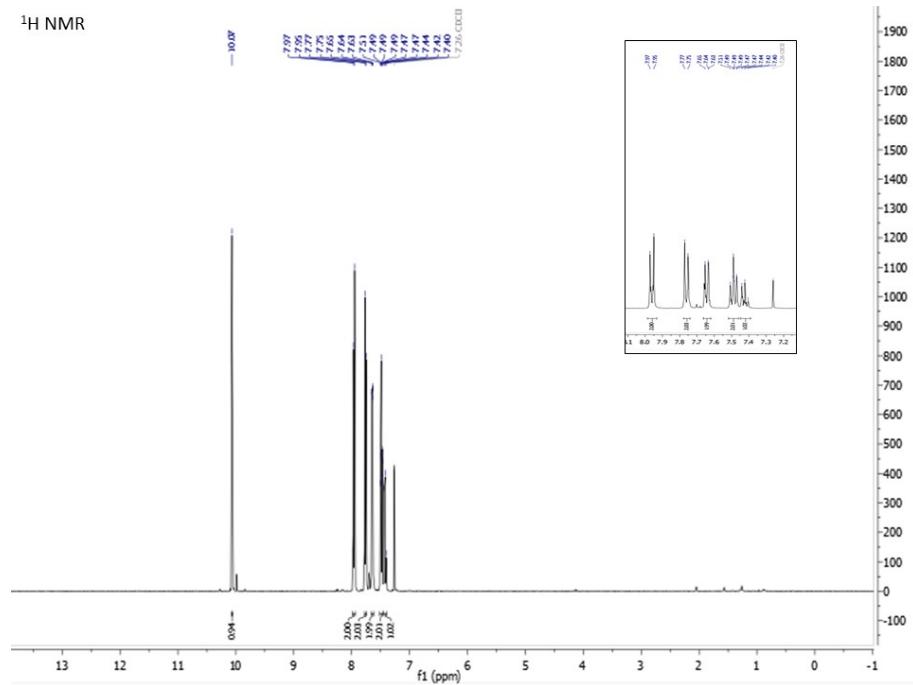


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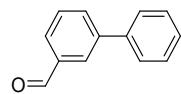


Colourless oil

HRMS: $C_{13}H_{11}O^+ [M+H]^+$, calcd: 183.08040, found: 183.08030, diff. (ppm): 0.55

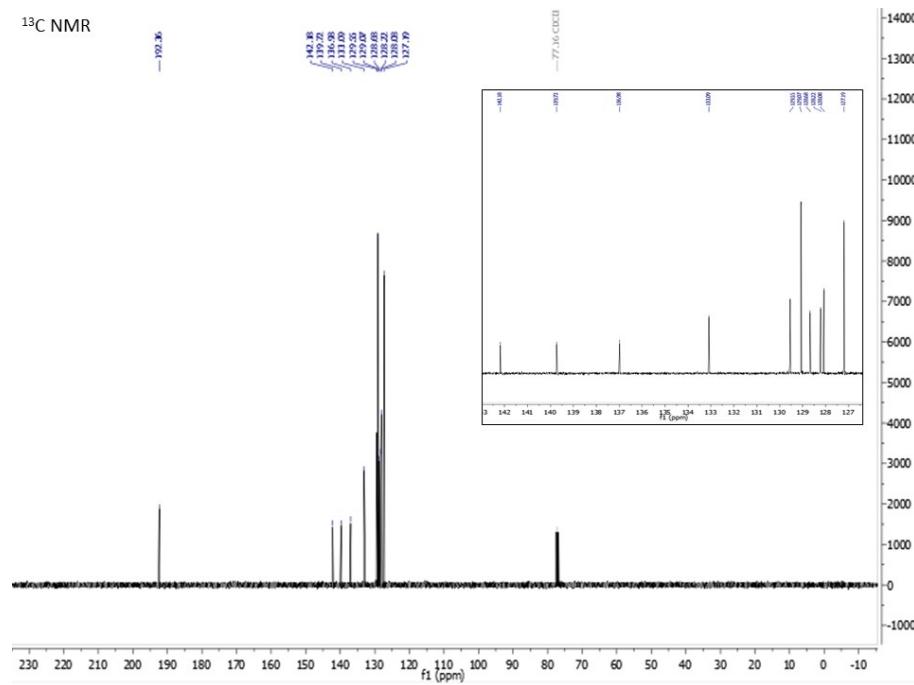
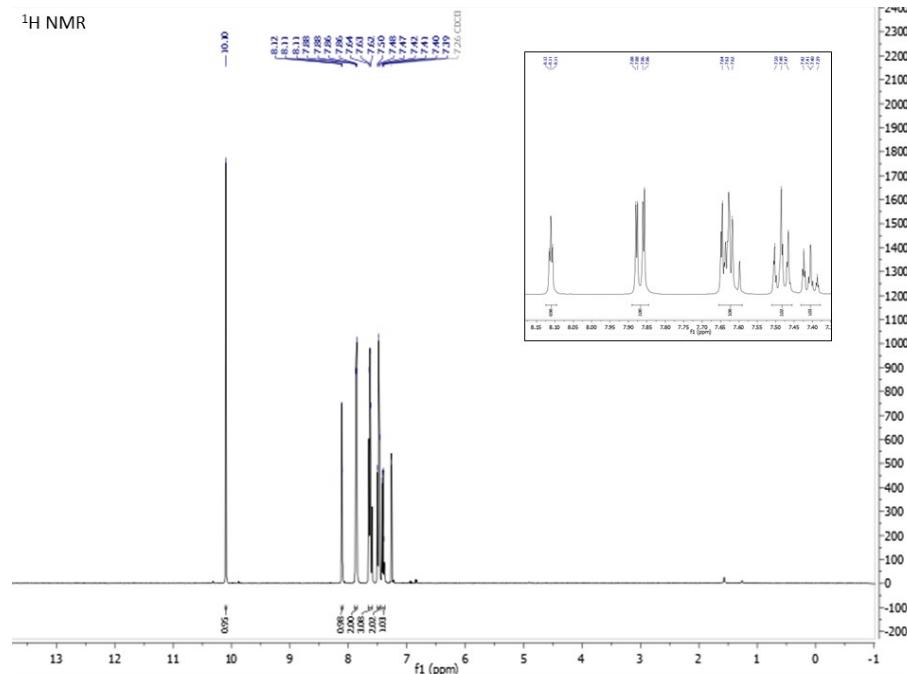


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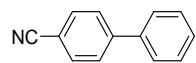


Colourless oil

HRMS: $C_{13}H_{11}O^+$ [M+H]⁺, calcd: 183.08040, found: 183.08070, diff. (ppm): -1.64

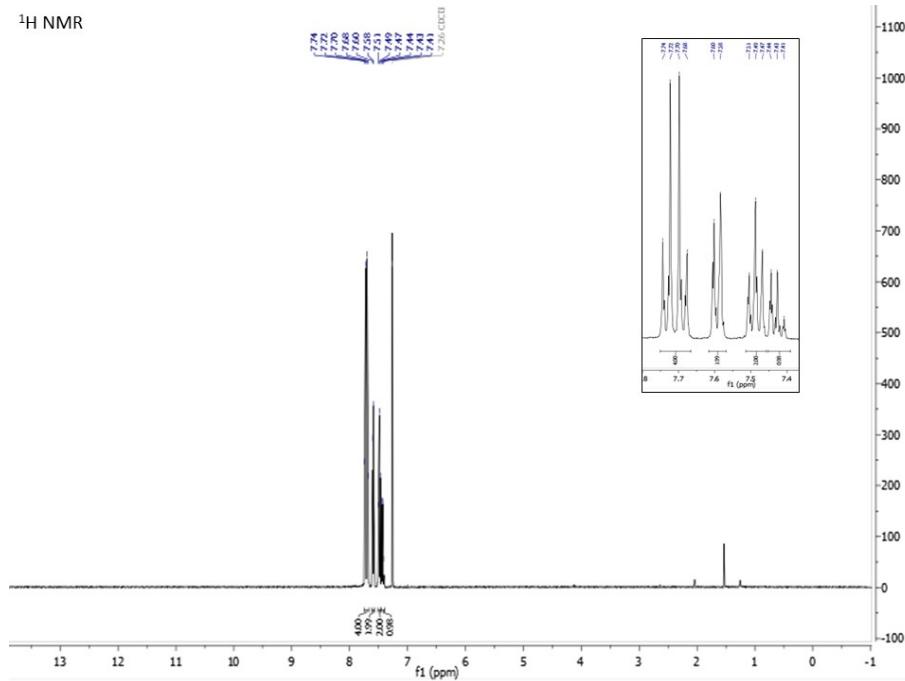


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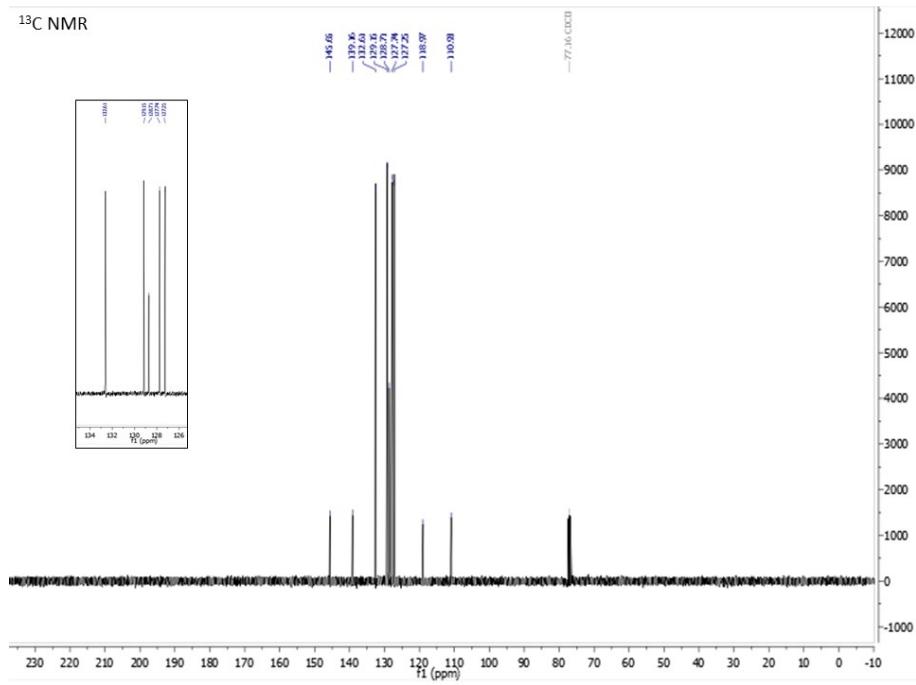


HRMS: $C_{13}H_{10}O^+$ [M+H]⁺, calcd: 180.08078, found: 180.08060, diff. (ppm): 1.00

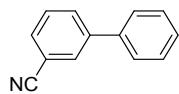
¹H NMR



¹³C NMR



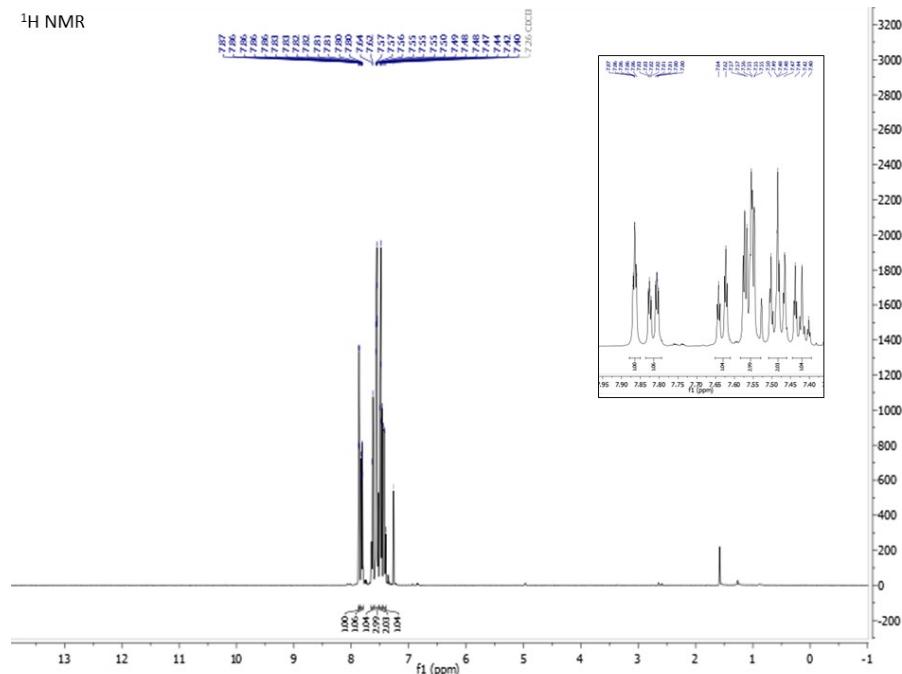
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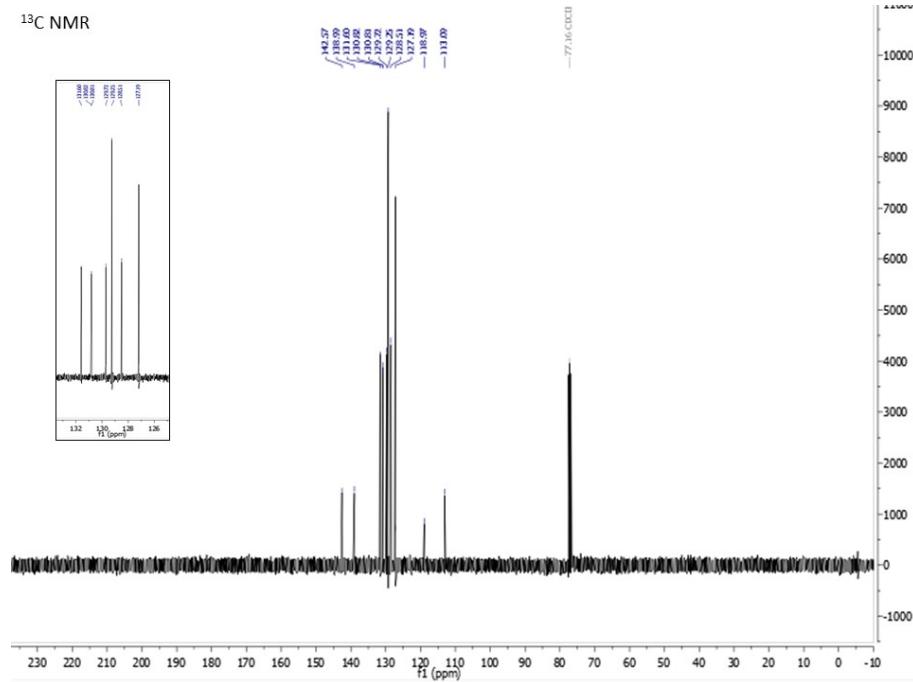
Colourless oil

HRMS: $C_{13}H_{10}O^+$ [M+H]⁺, calcd: 180.08078, found: 180.08000, diff. (ppm): 4.33

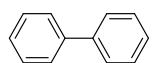
¹H NMR



¹³C NMR

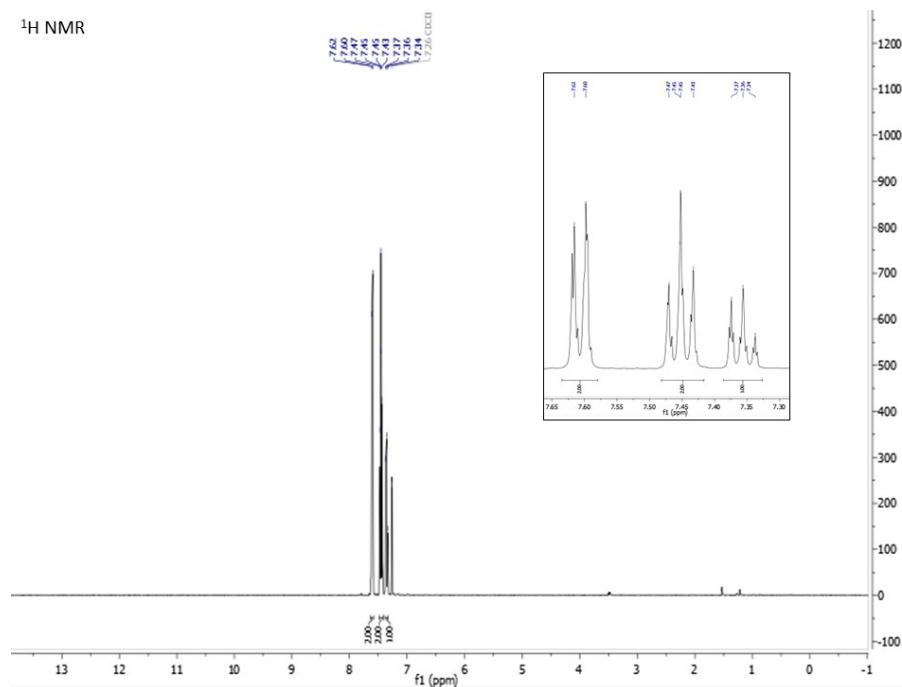


Entries 7-9

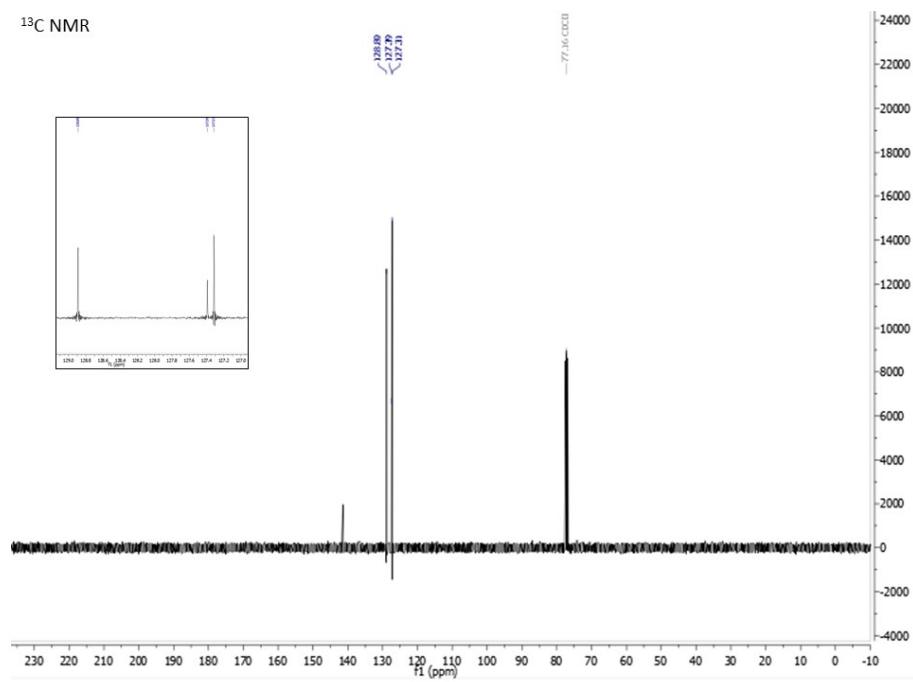


White powder

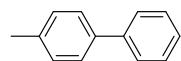
¹H NMR



¹³C NMR

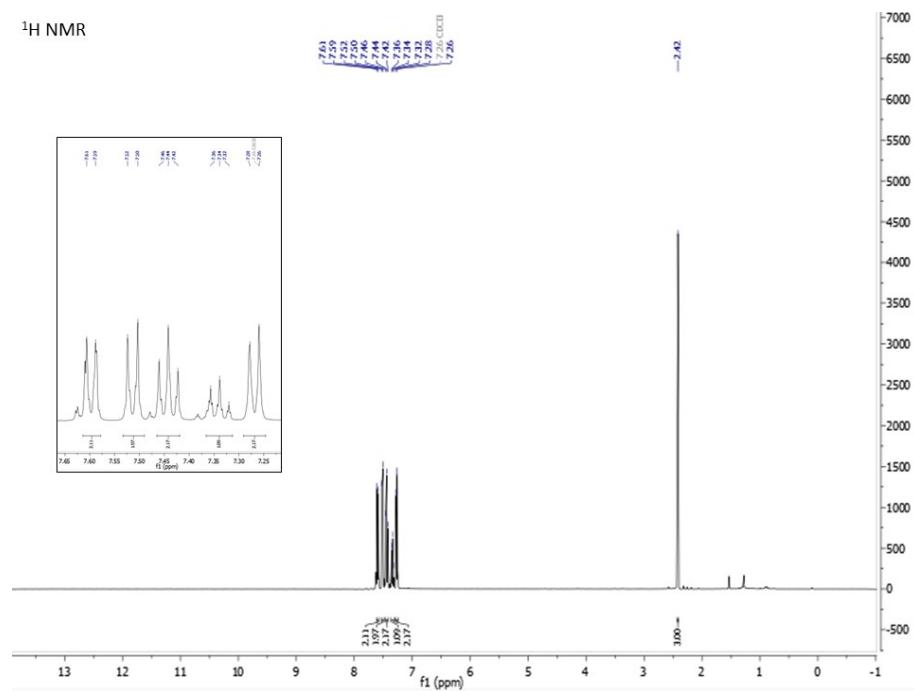


Entries 10,11

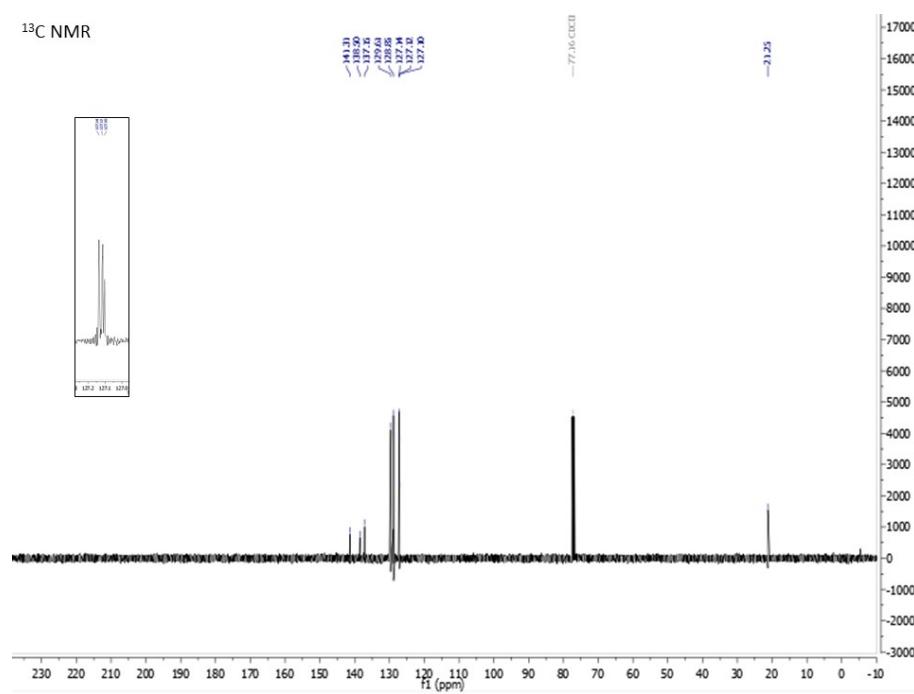


Colourless powder

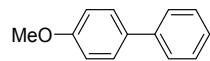
¹H NMR



¹³C NMR



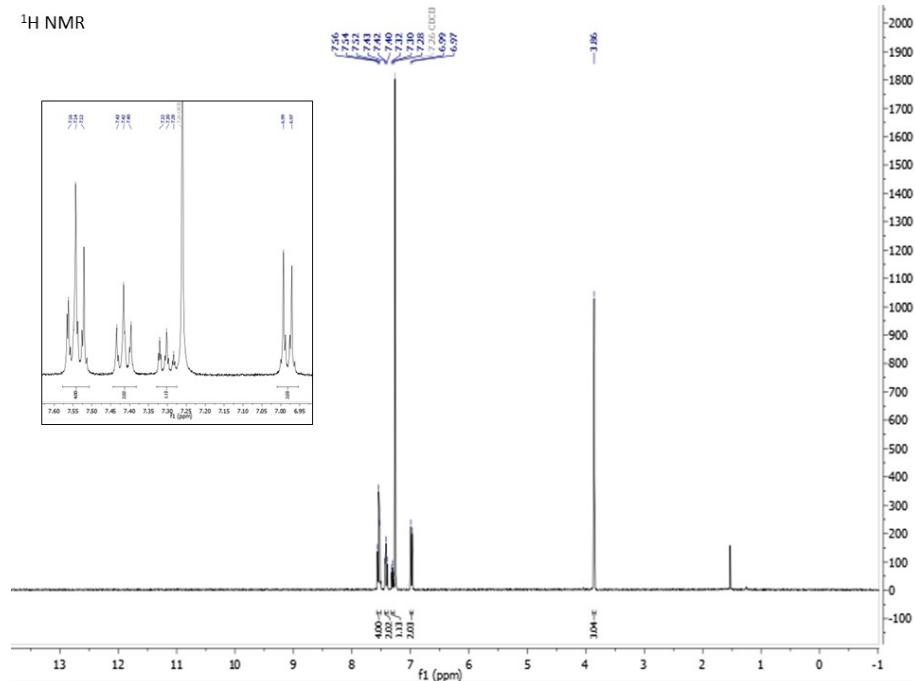
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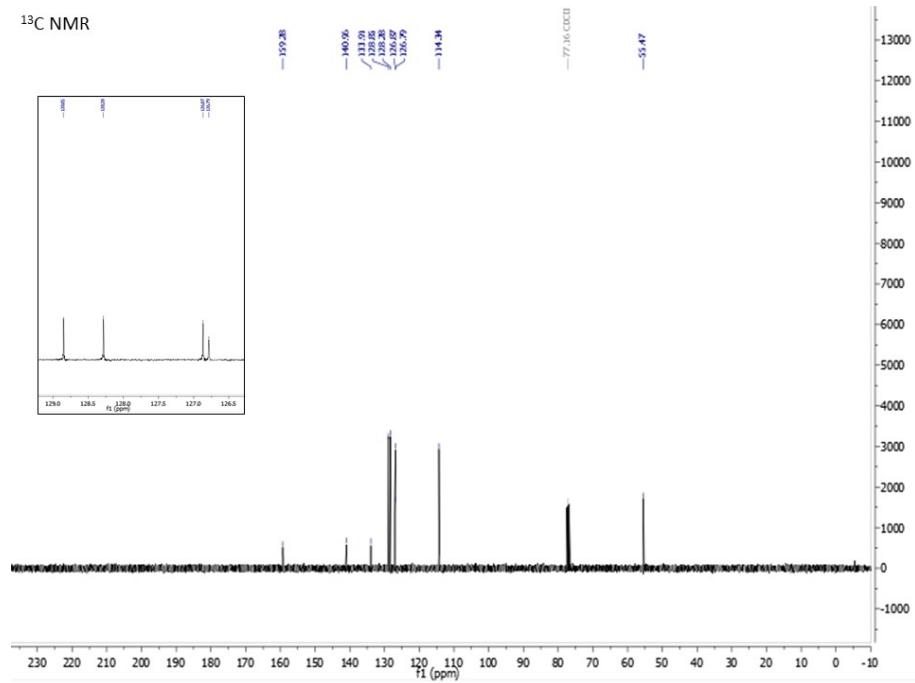
White powder

HRMS: $C_{13}H_{13}O^+$ [M+H]⁺, calcd: 185.09609, found: 185.09580, diff. (ppm): 1.57

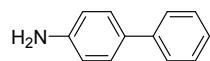
¹H NMR



¹³C NMR



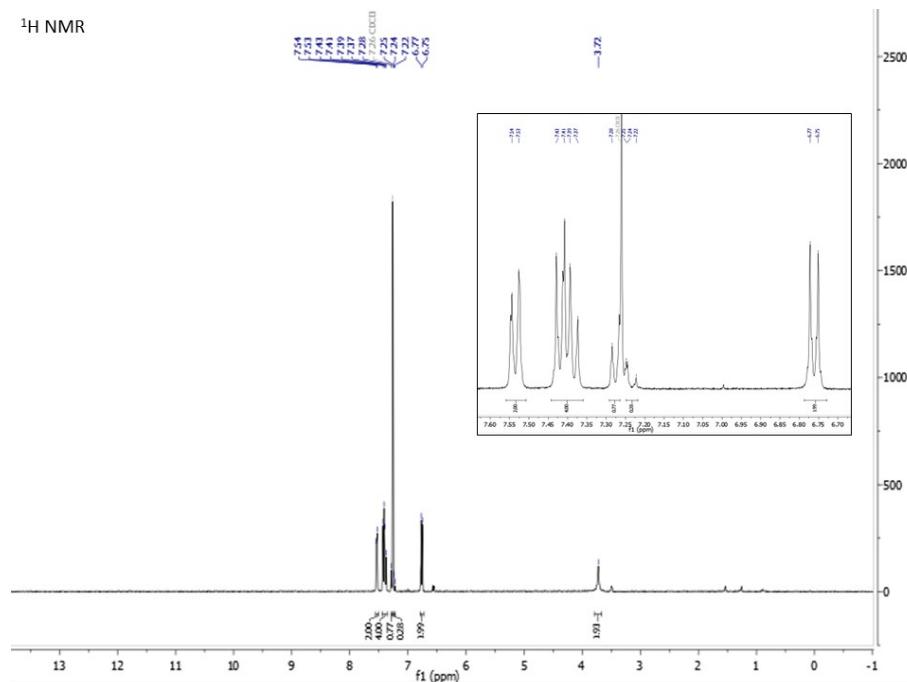
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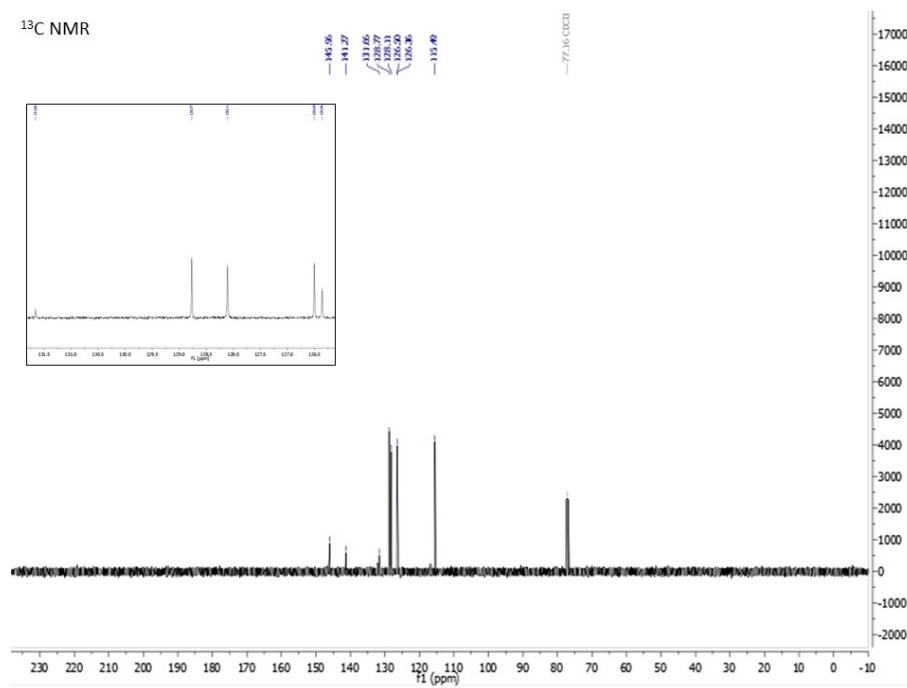
Light yellow powder

HRMS: $C_{12}H_{12}N^+$ [M+H]⁺, calcd: 170.09643, found: 170.09710, diff. (ppm): -3.94

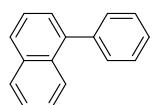
¹H NMR



¹³C NMR

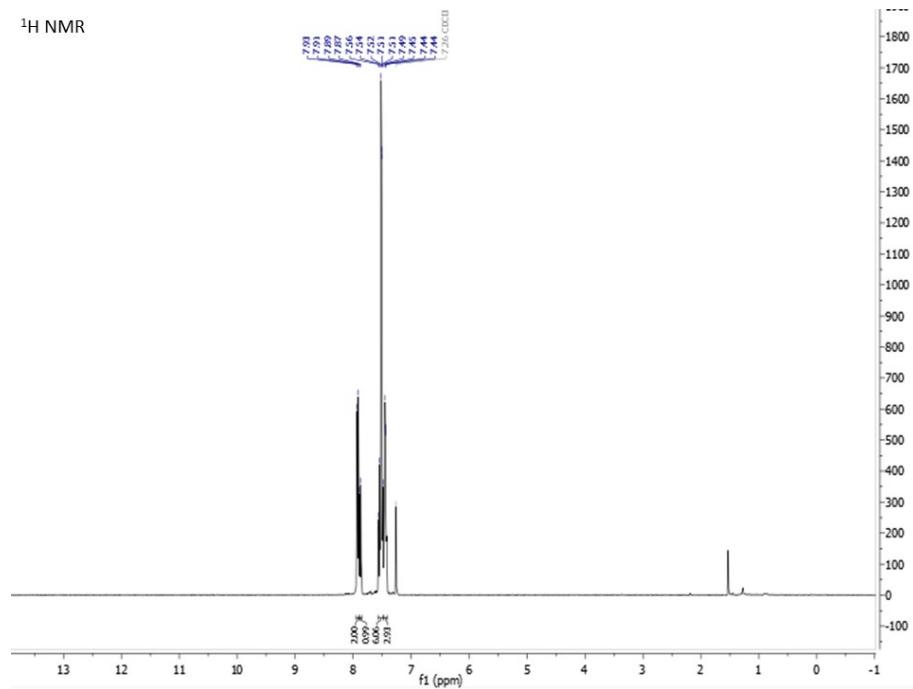


Entry 14

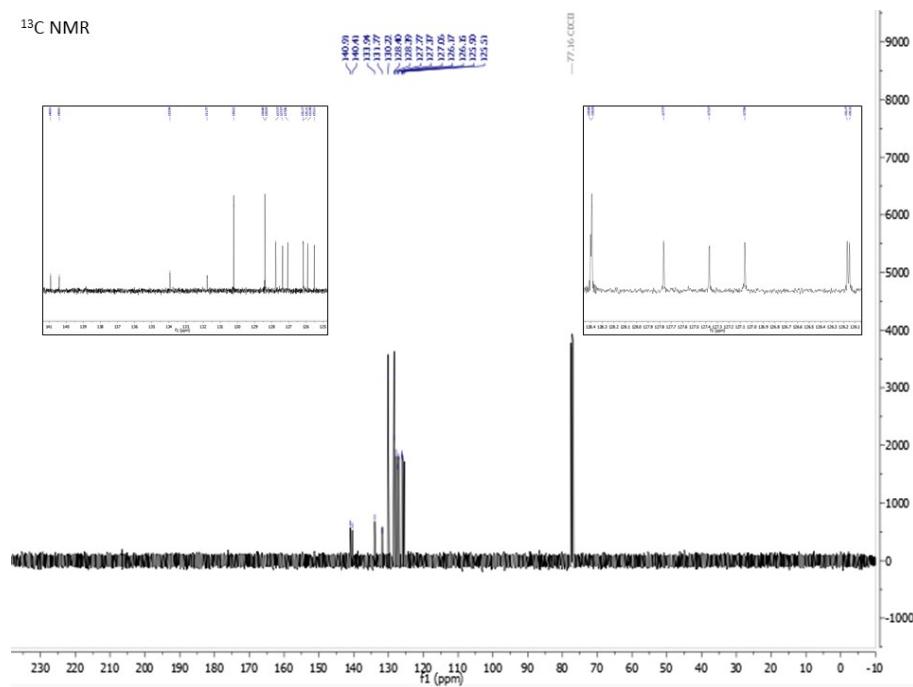


Colourless oil

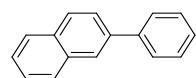
¹H NMR



¹³C NMR

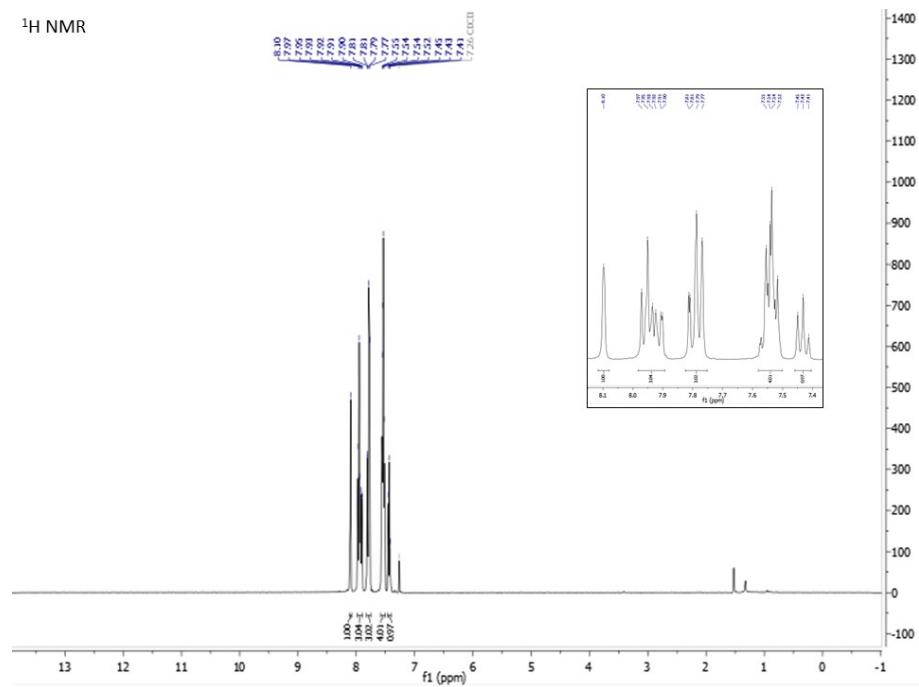


Entry 15

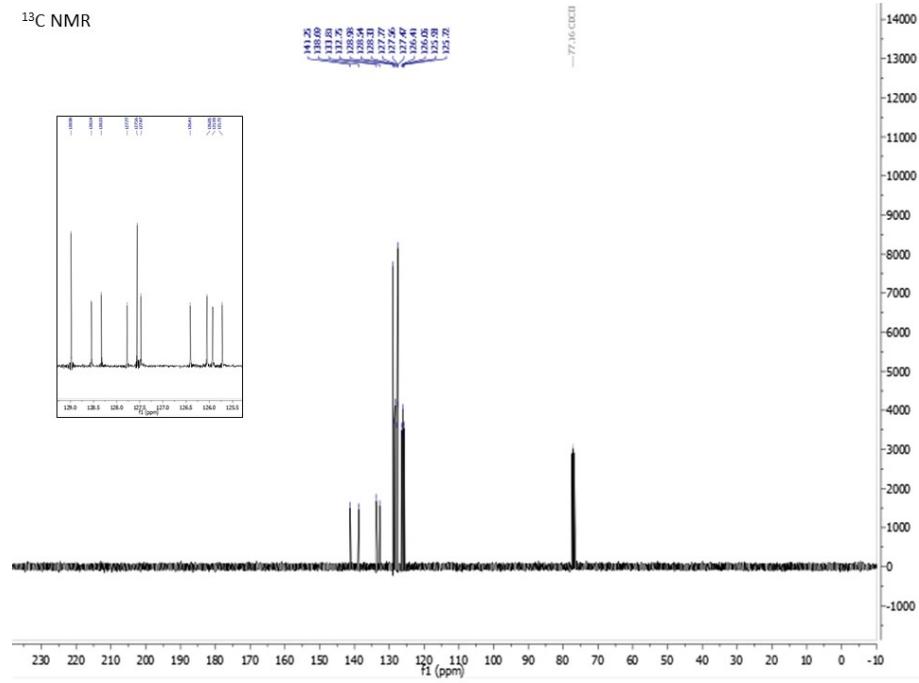


White powder

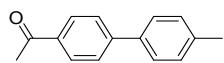
¹H NMR



¹³C NMR

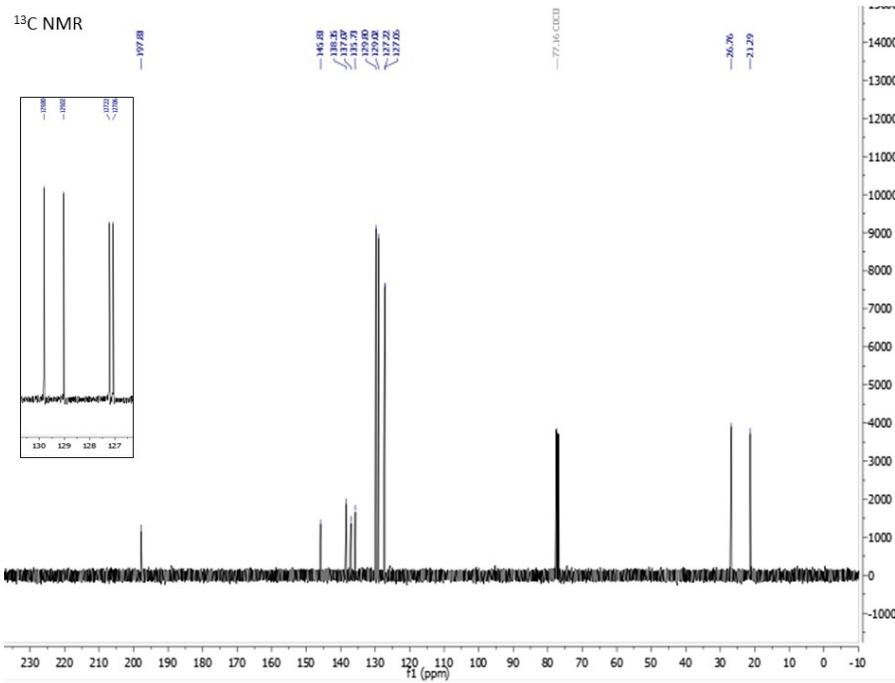
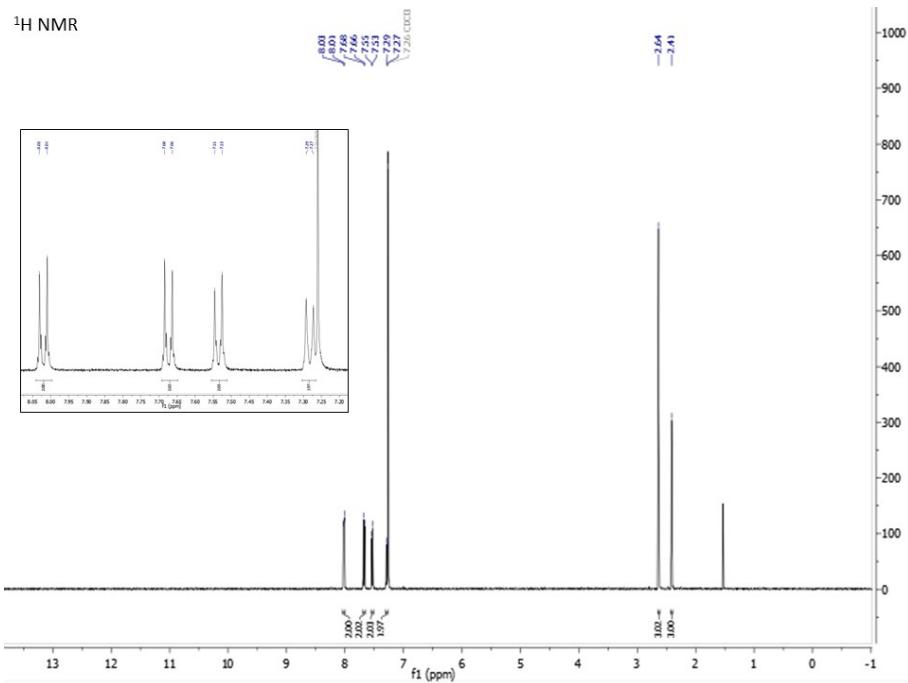


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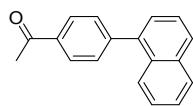


White powder

HRMS: $C_{15}H_{15}O^+$ [M+H]⁺, calcd: 211.11174, found: 211.11130, diff. (ppm): 2.08

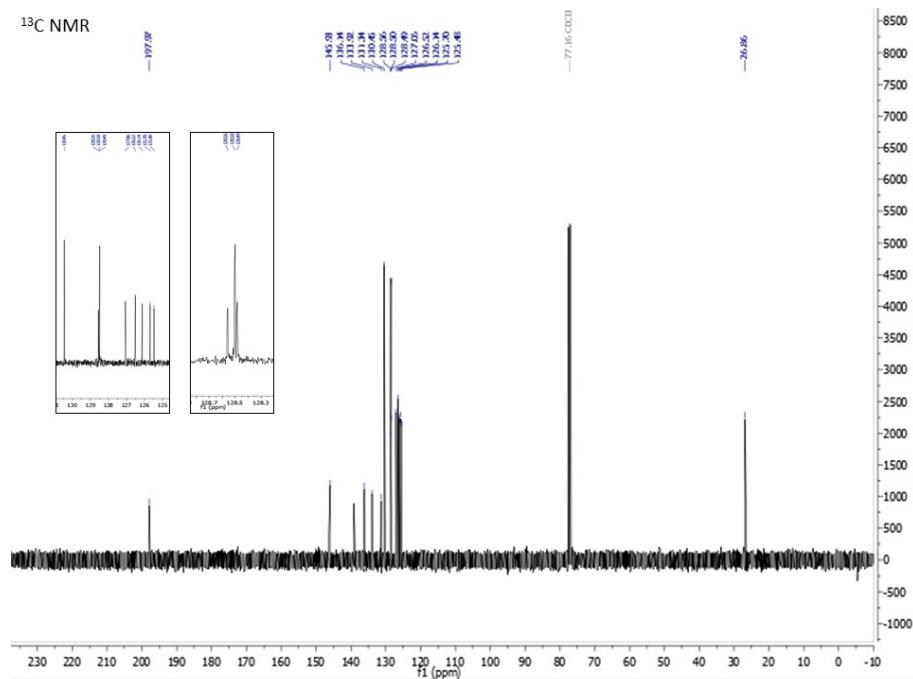
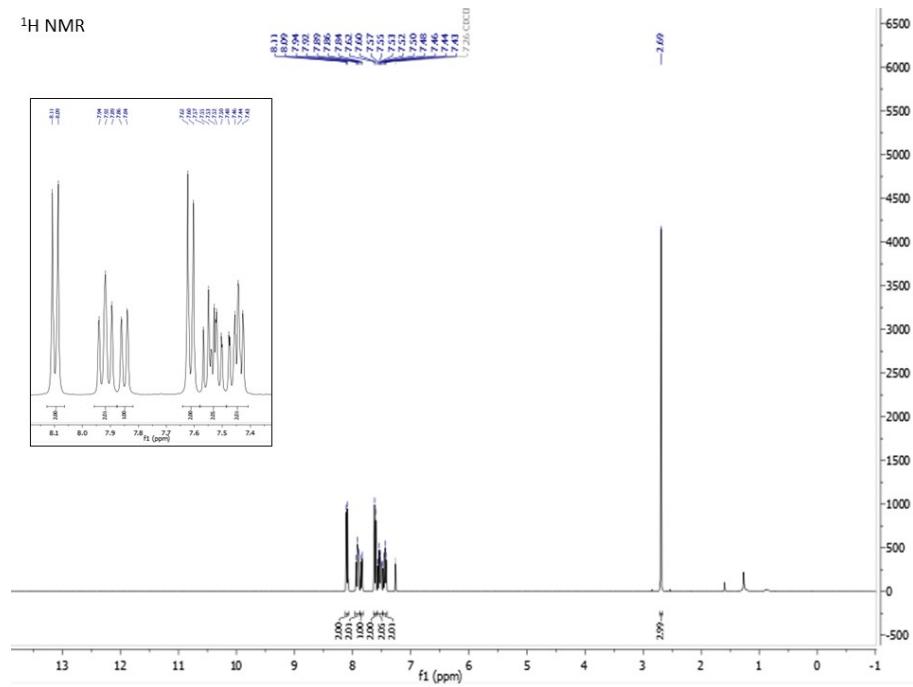


Entry 17

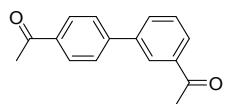


White powder

HRMS: C₁₈H₁₅O⁺ [M+H]⁺, calcd: 247.11174, found: 247.11220, diff. (ppm): -1.86

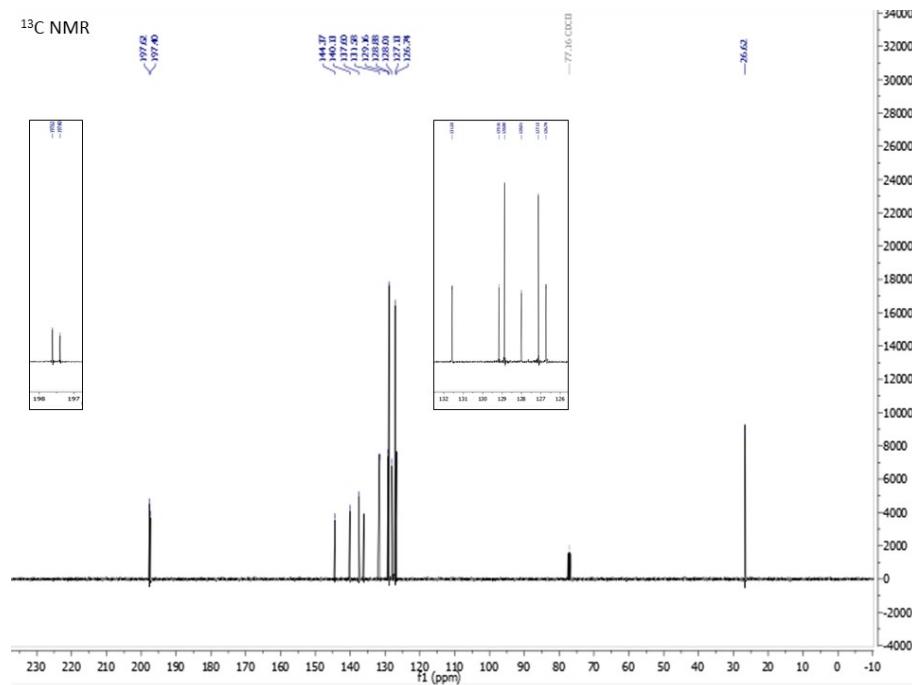
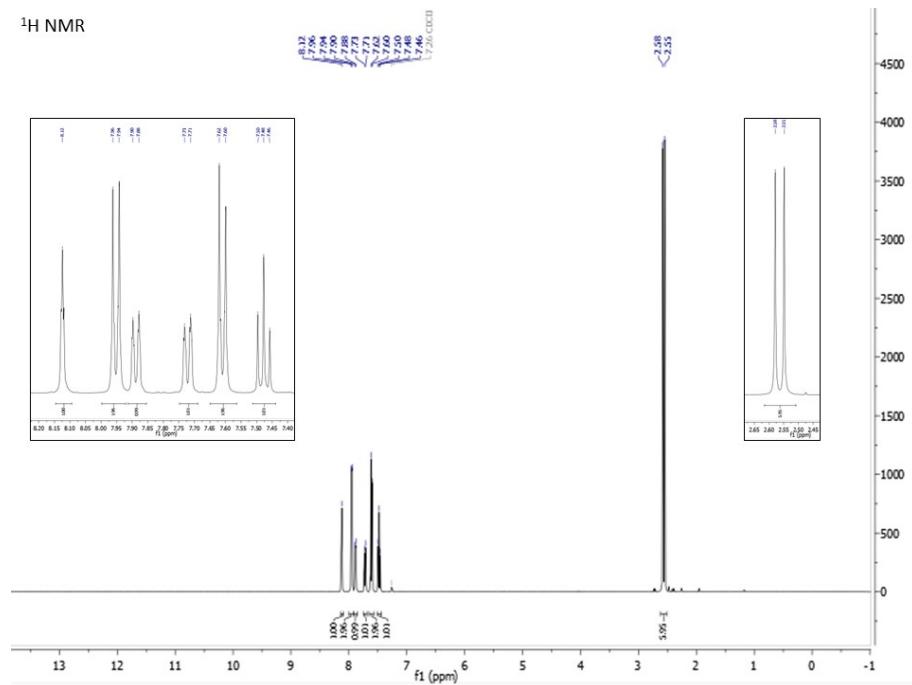


Entry 18



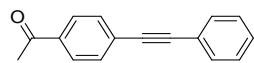
White solid

HRMS: $C_{16}H_{14}N^+$ [M+H]⁺, calcd: 239.10666, found: 239.10700, diff. (ppm): -1.42



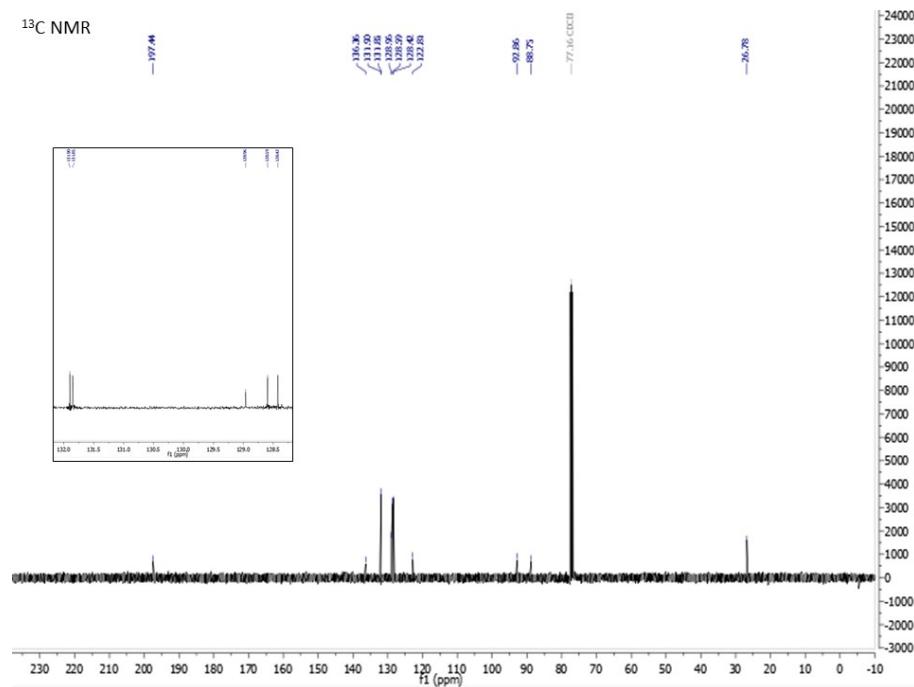
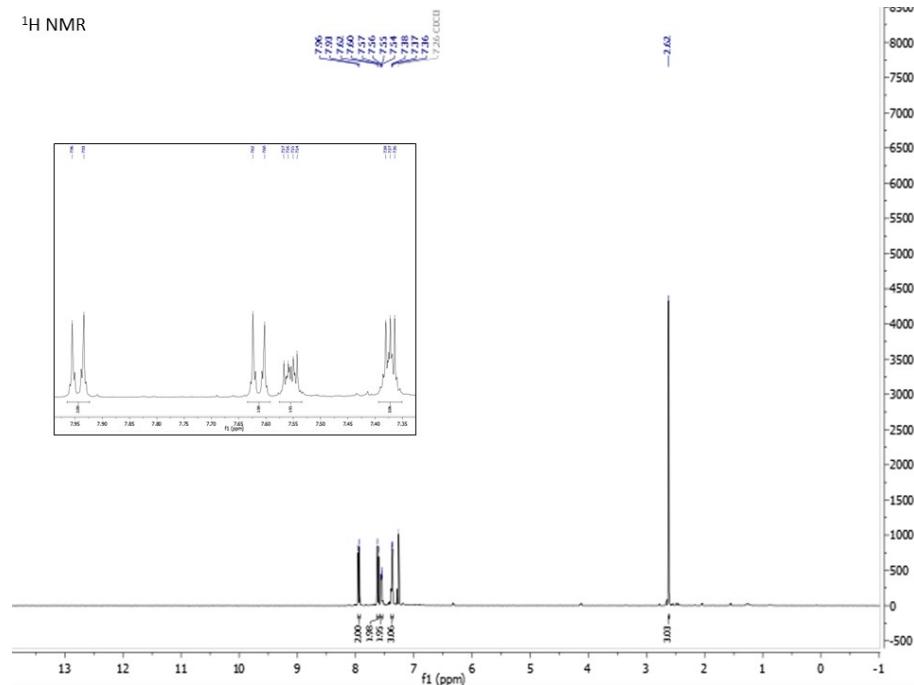
Sonogashira substrates scope characterization

Entries 1

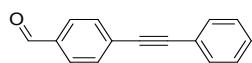


Brown solid

HRMS: C₁₆H₁₃O⁺ [M+H⁺], calcd: 221.09610, found: 221.09580, diff. (ppm): 1.36

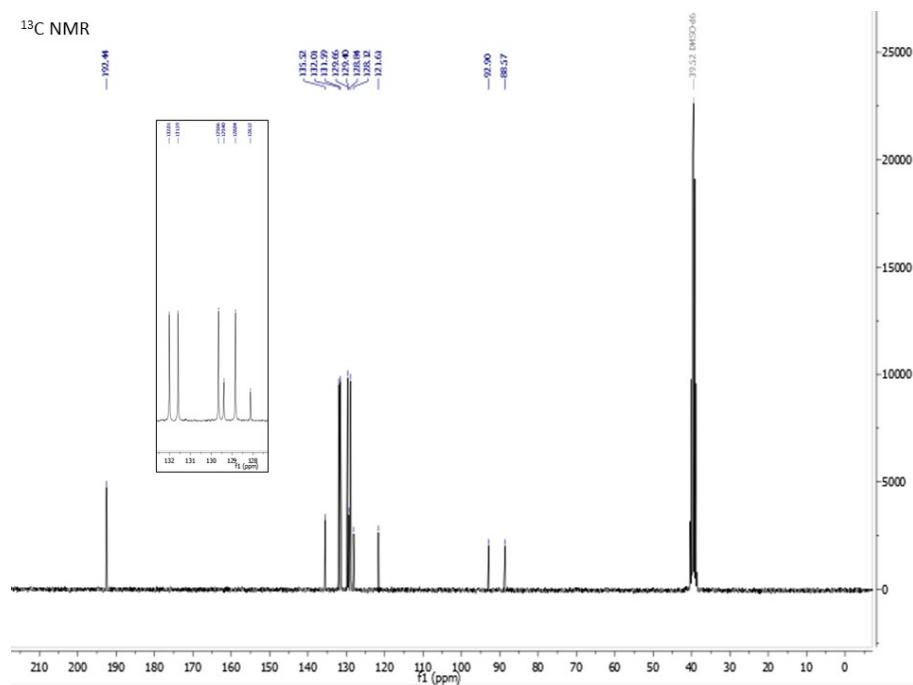
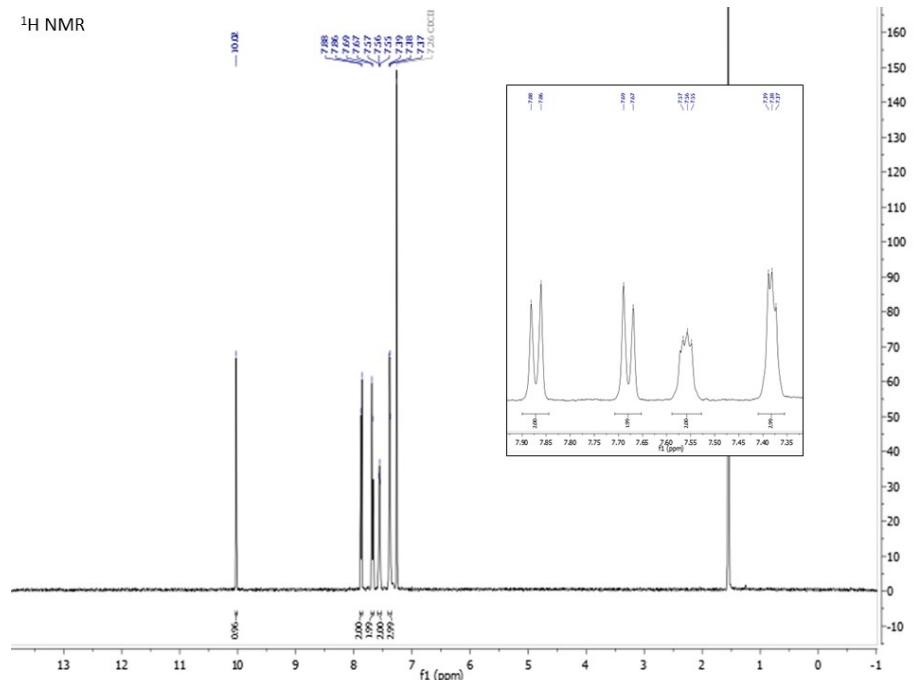


Entries 3

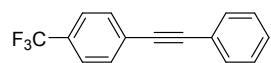


White solid

HRMS: C₁₅H₁₁O⁺ [M+H⁺], calcd: 207.08044, found: 207.08130, diff. (ppm): -4.15

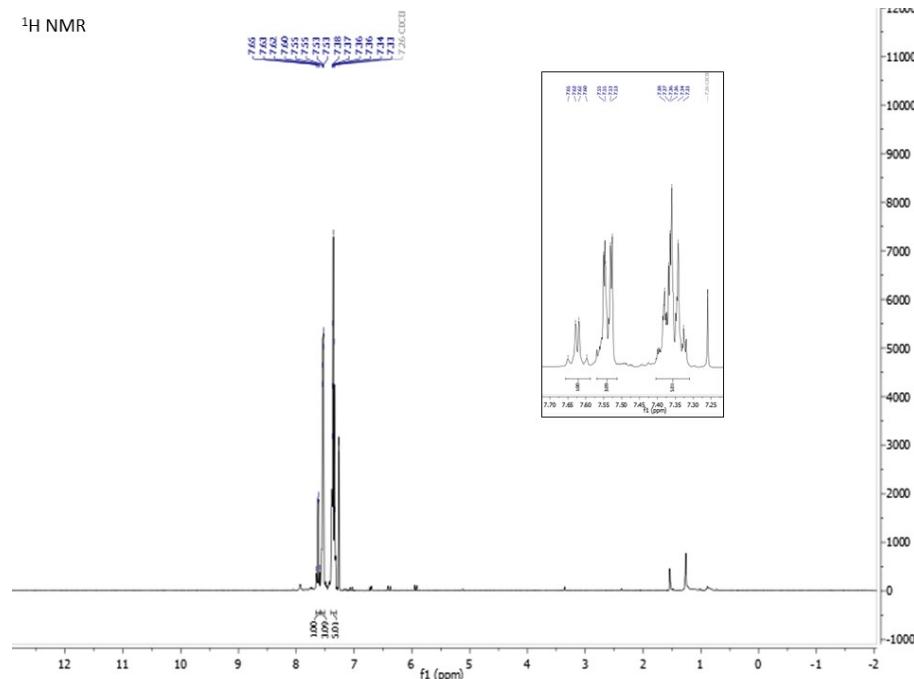


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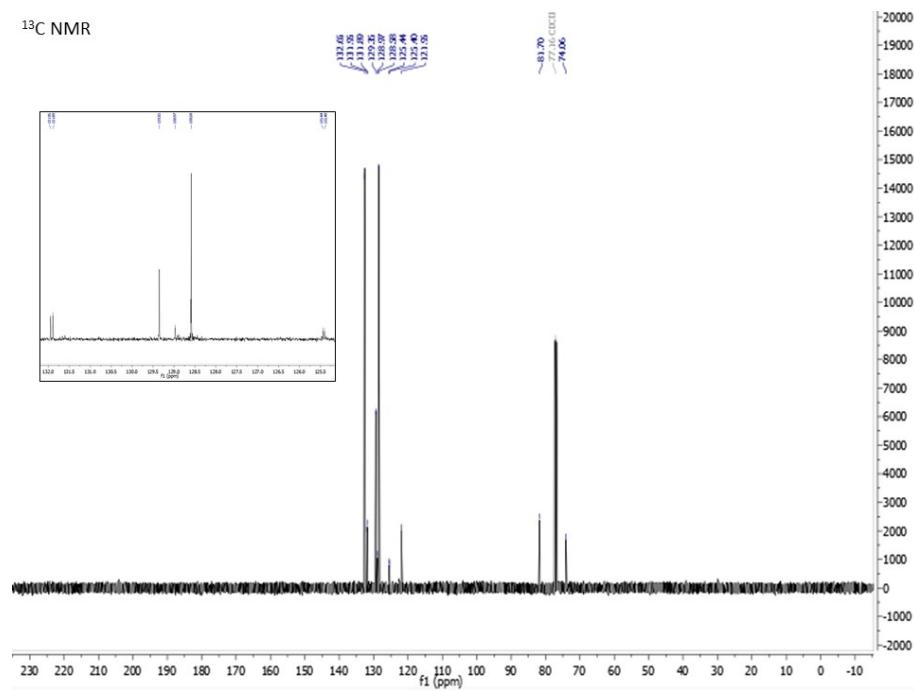


White solid

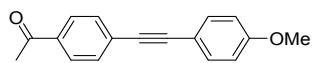
^1H NMR



^{13}C NMR



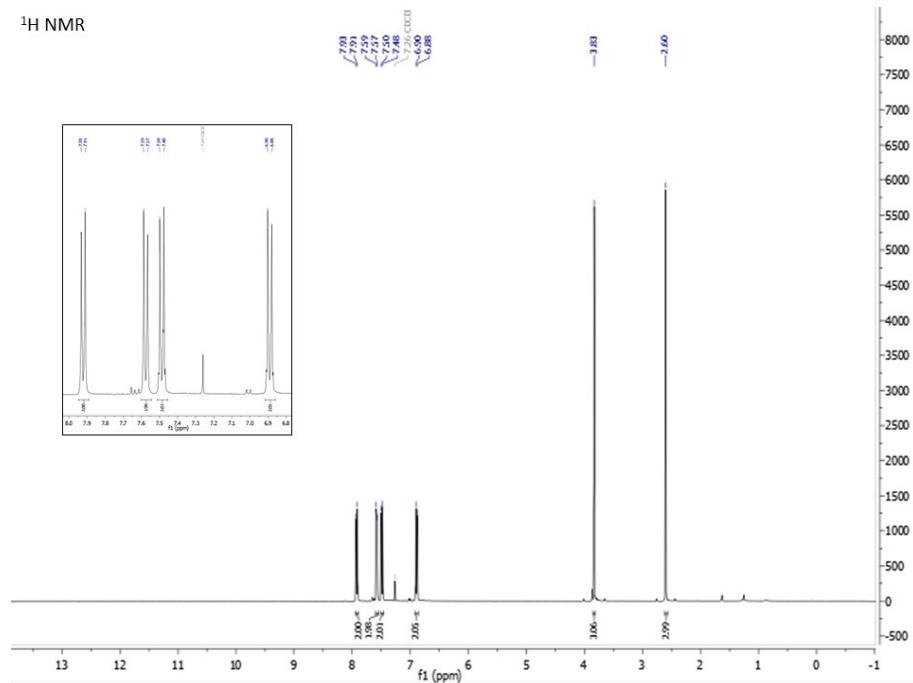
Entry 10



White solid

HRMS: $C_{17}H_{15}O_2^+ [M+H^+]$, calcd: 251.10670, found: 251.10630, diff. (ppm): 1.59

1H NMR



^{13}C NMR

