

## Supporting Information

# NHC Ligand-Based Half-Sandwich Iridium Complexes: Synthesis, Structure and Catalytic Activity in Acceptorless Dehydrogenation and Transfer Hydrogenation

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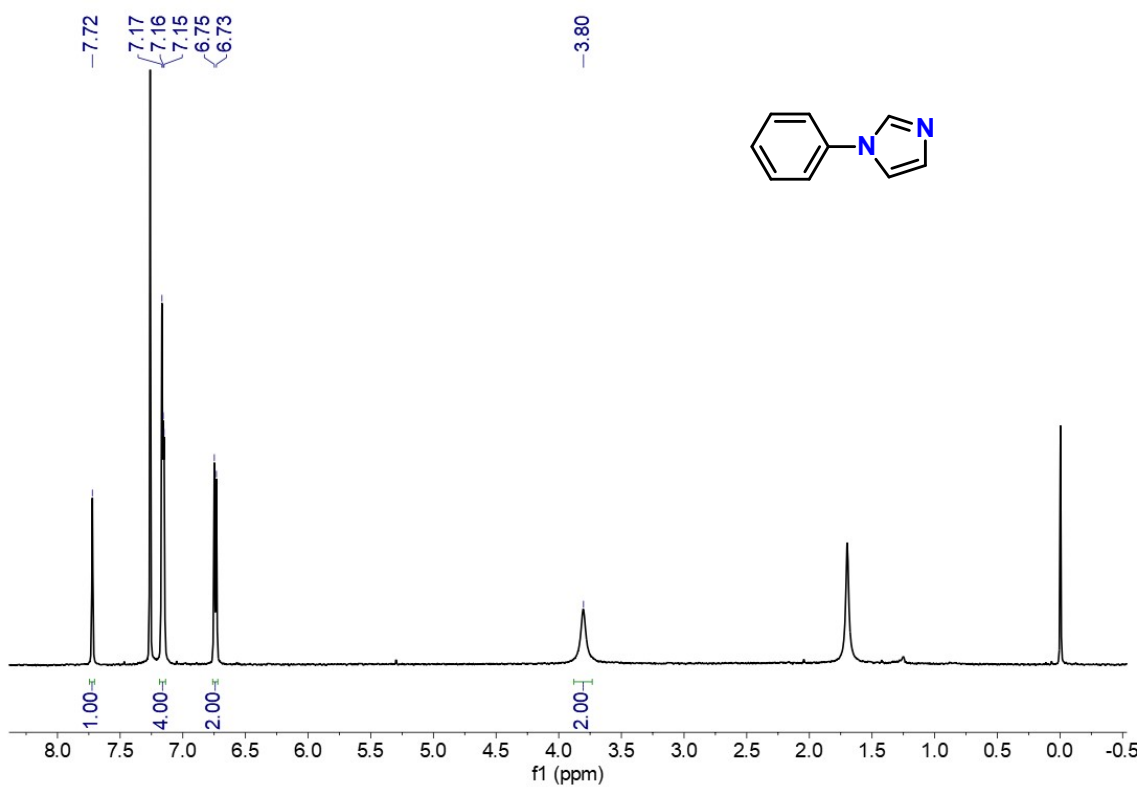


Figure S1.  $^1\text{H}$  NMR spectra of A1

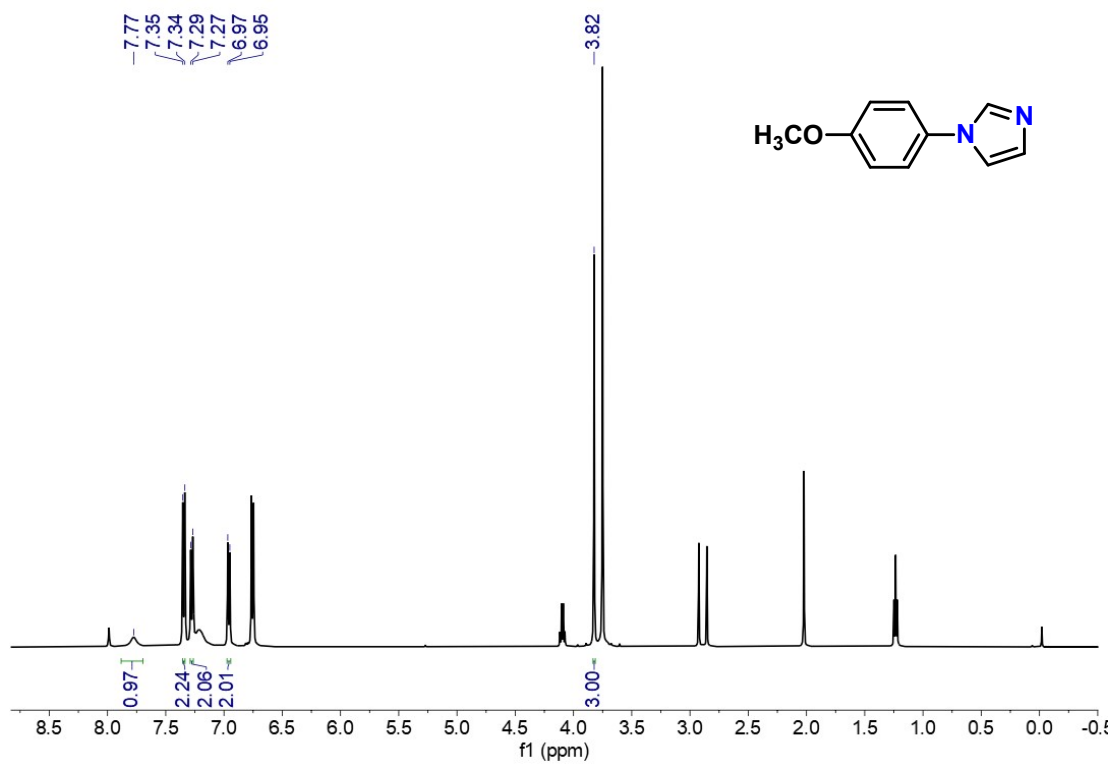


Figure S2.  $^1\text{H}$  NMR spectra of A2

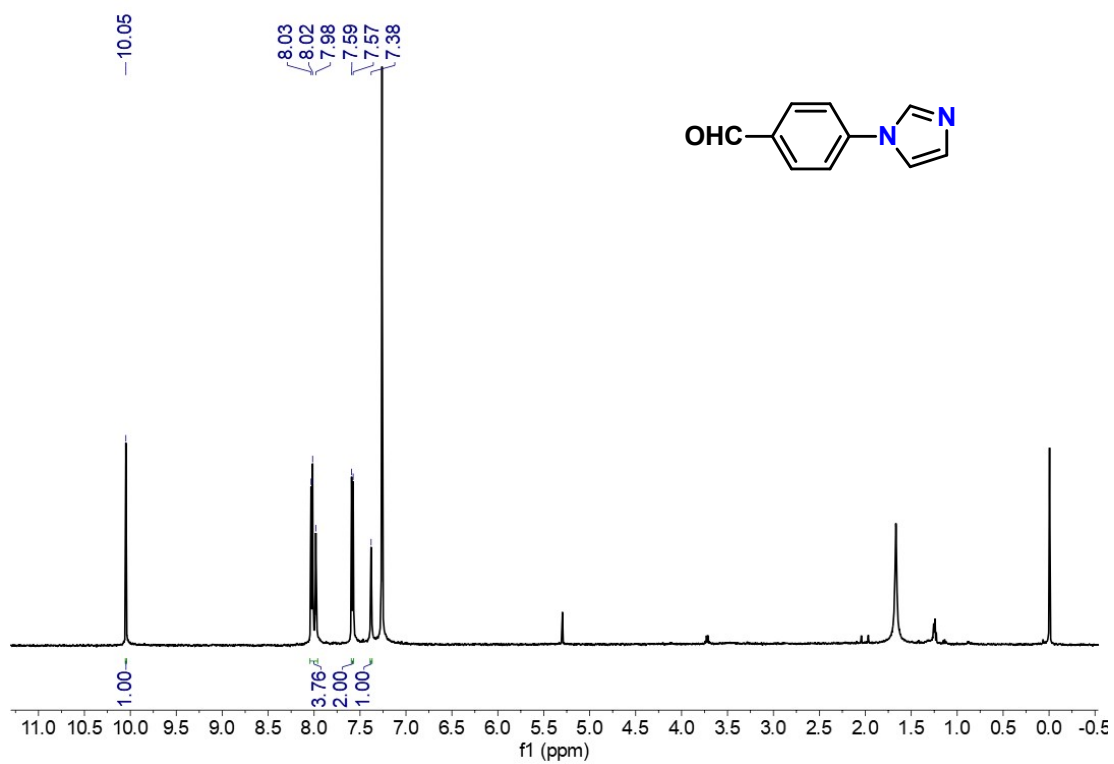


Figure S3. <sup>1</sup>H NMR spectra of **A3**

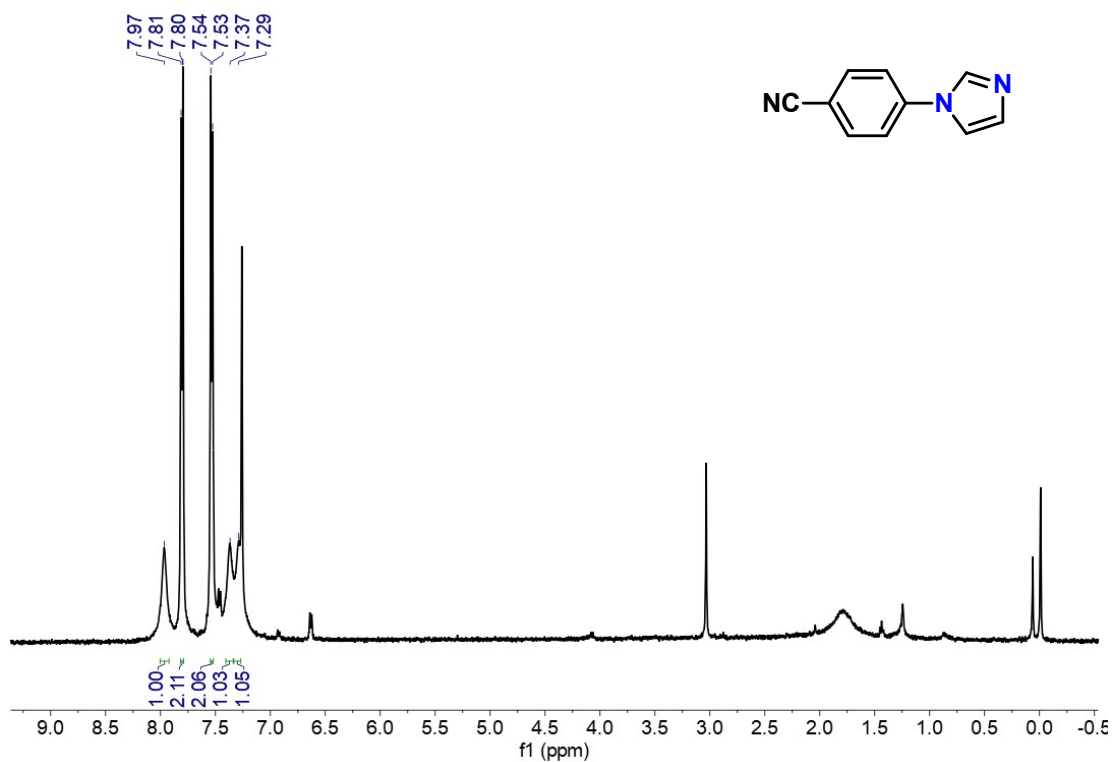


Figure S4. <sup>1</sup>H NMR spectra of **A4**

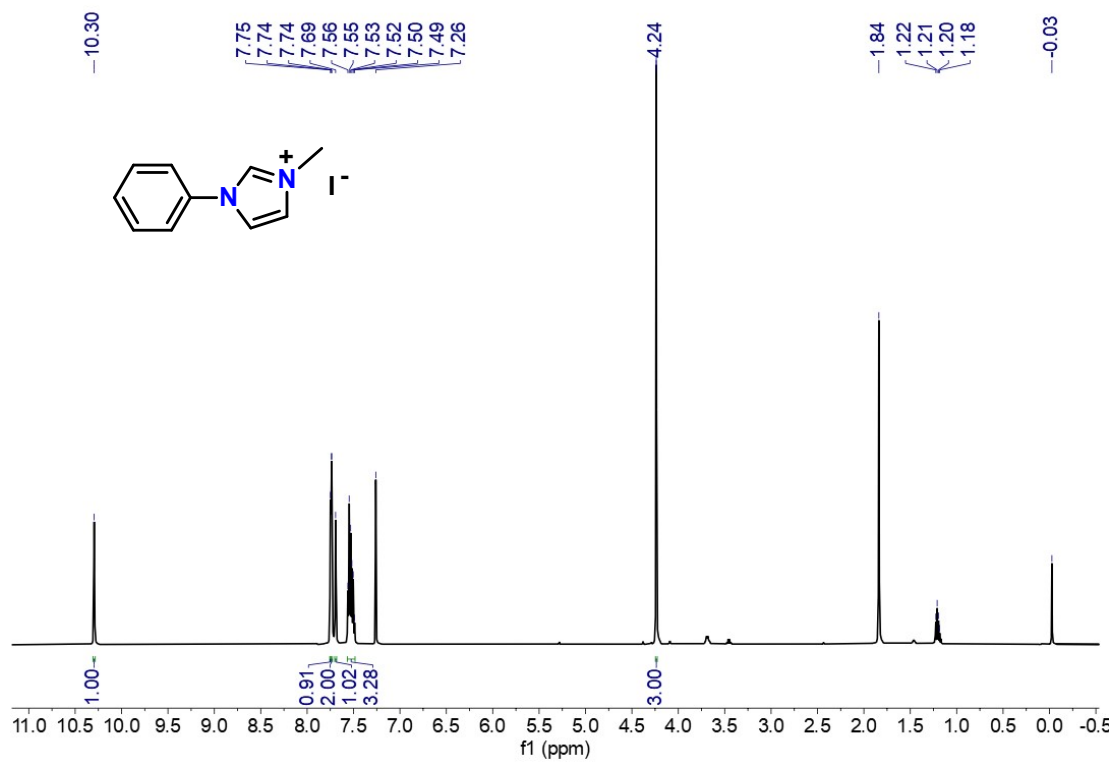


Figure S5. <sup>1</sup>H NMR spectra of L1

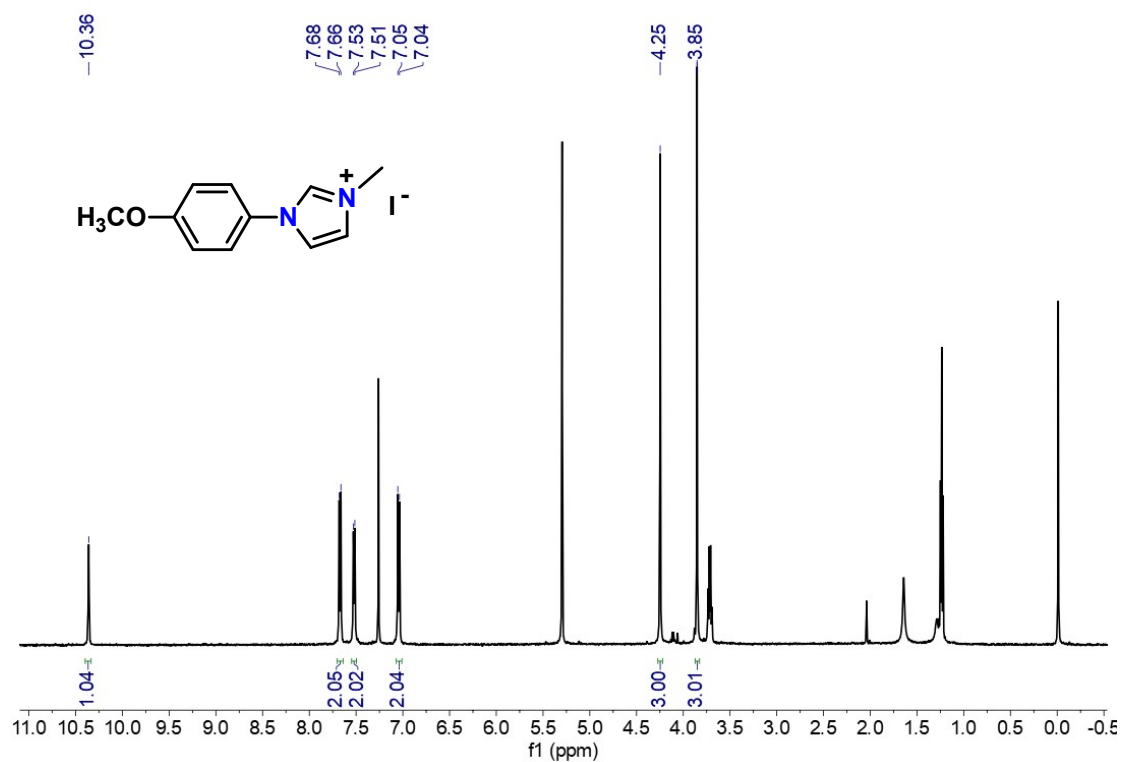


Figure S6. <sup>1</sup>H NMR spectra of L2

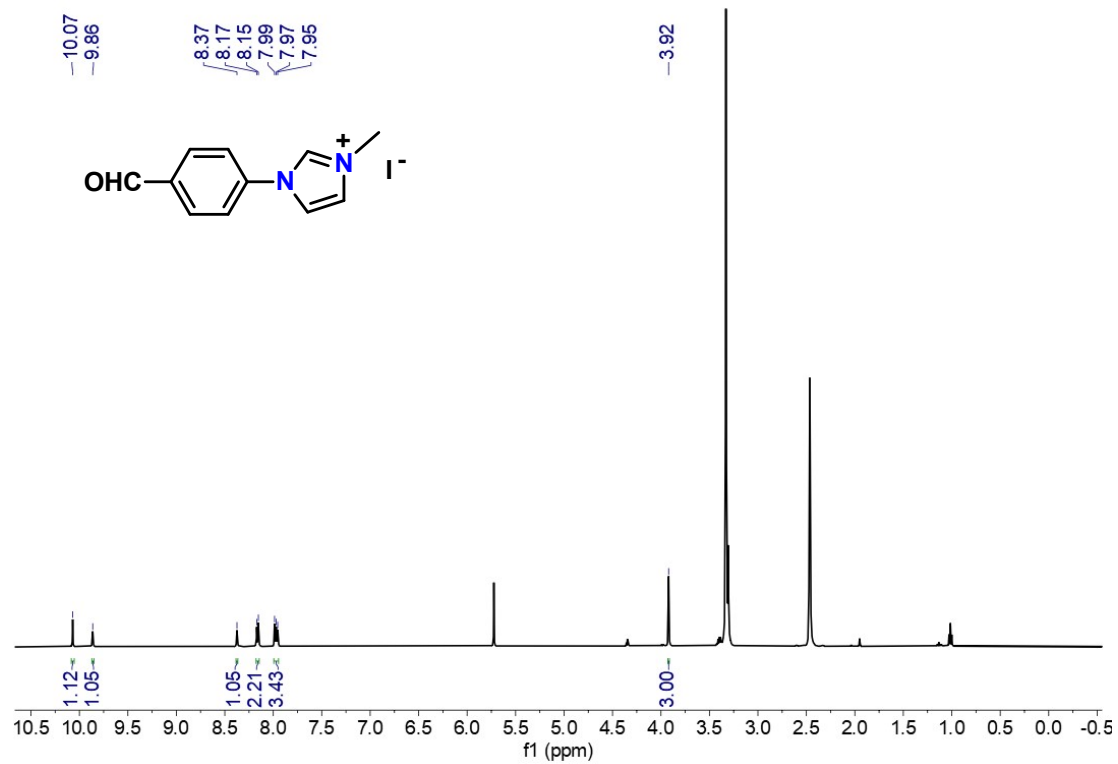


Figure S7. <sup>1</sup>H NMR spectra of L3

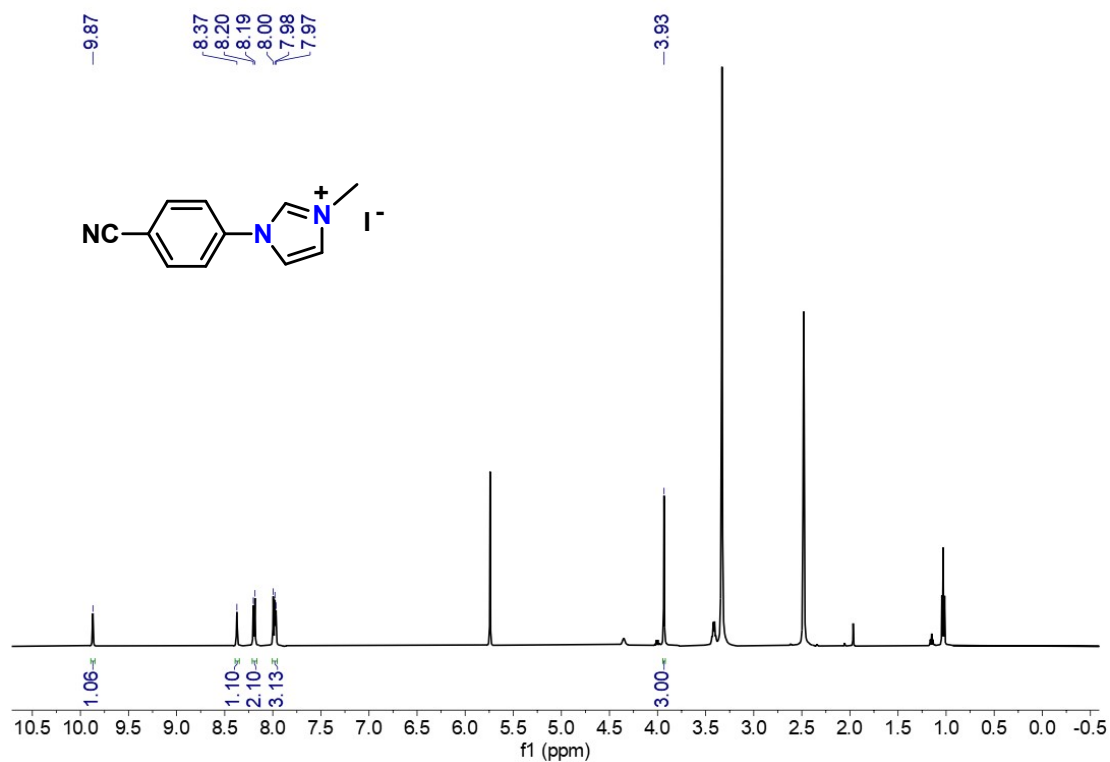


Figure S8. <sup>1</sup>H NMR spectra of L4

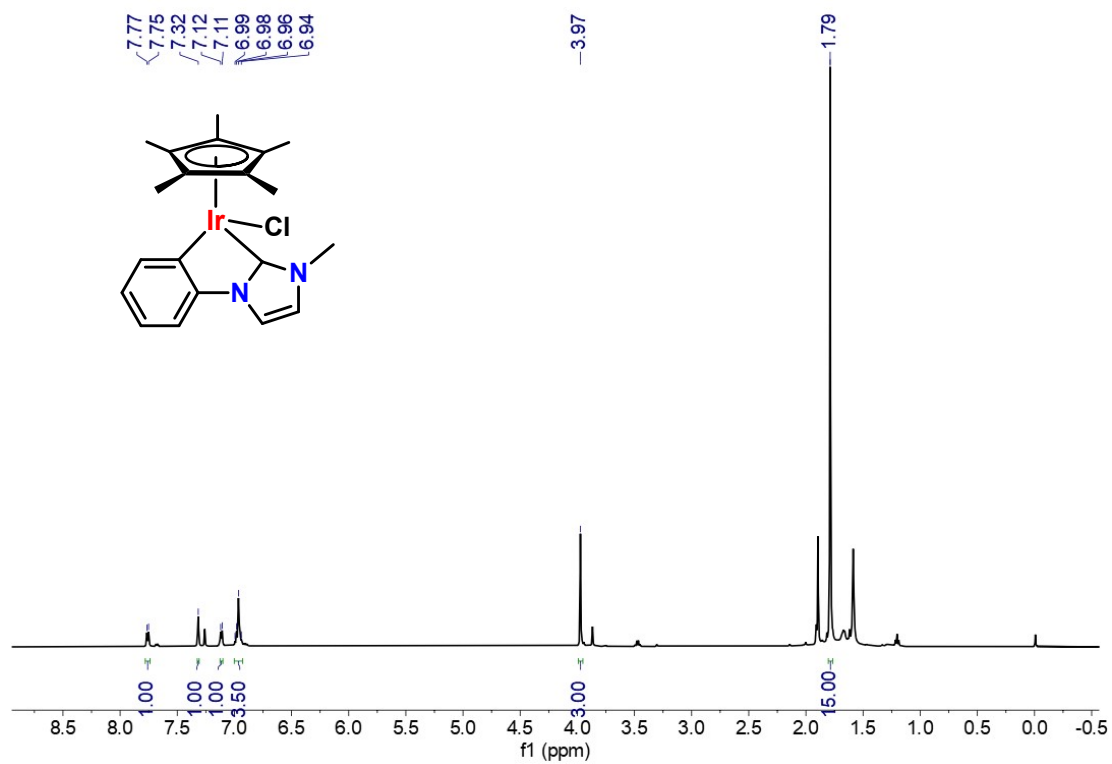


Figure S9.  $^1\text{H}$  NMR spectra of **1**

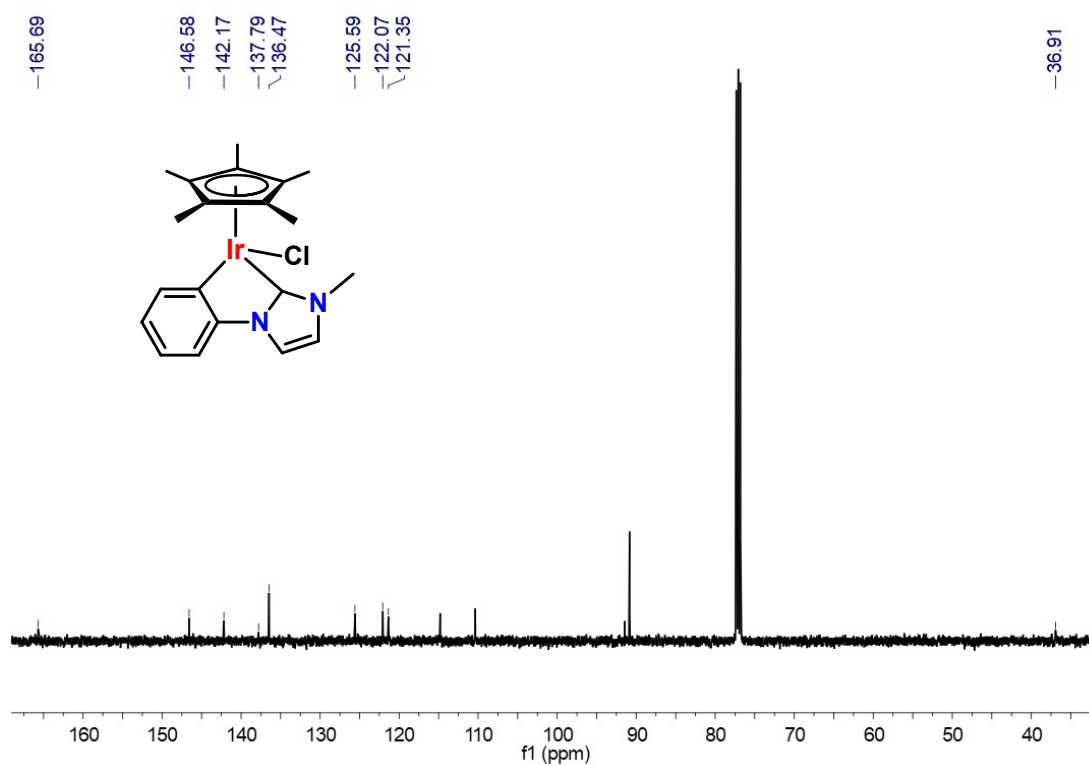


Figure S10.  $^{13}\text{C}$  NMR spectra of **1**

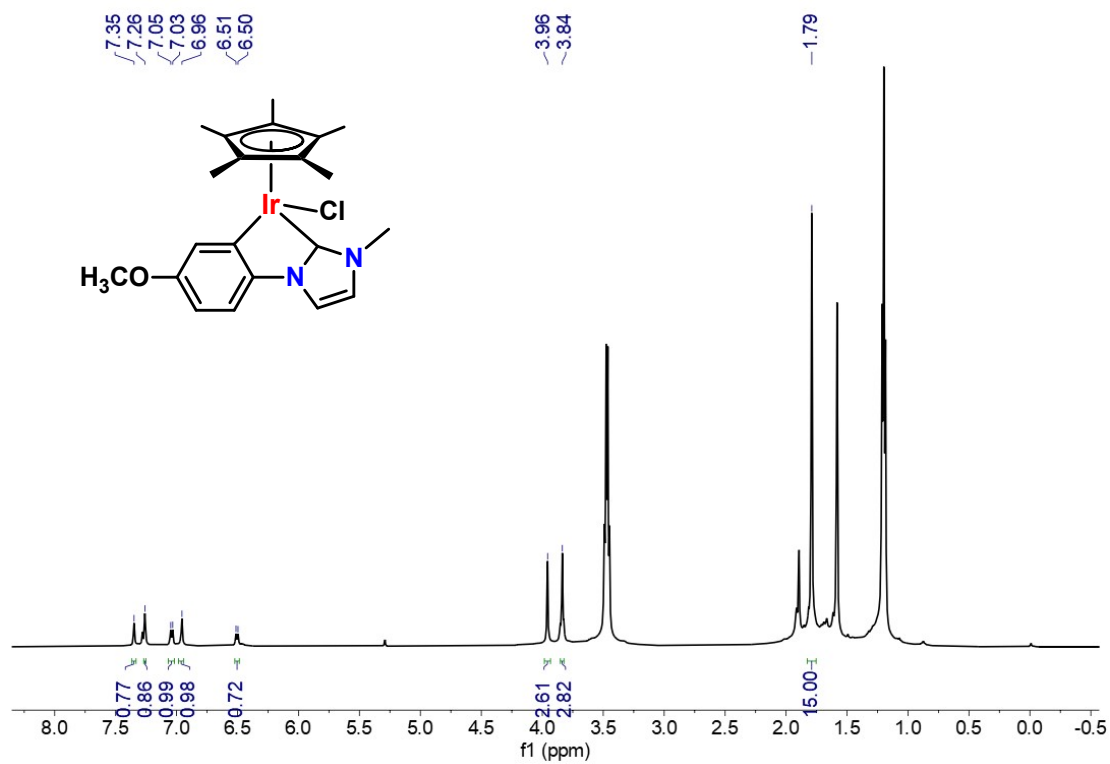


Figure S11. <sup>1</sup>H NMR spectra of **2**

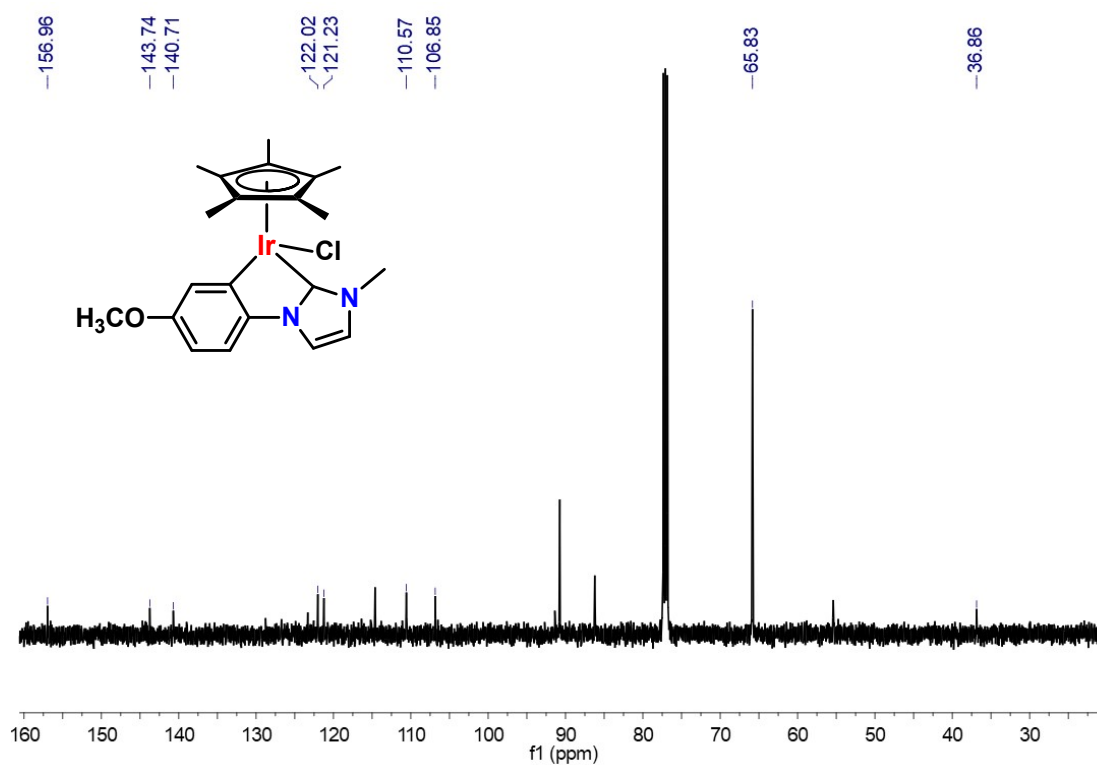


Figure S12. <sup>13</sup>C NMR spectra of **2**

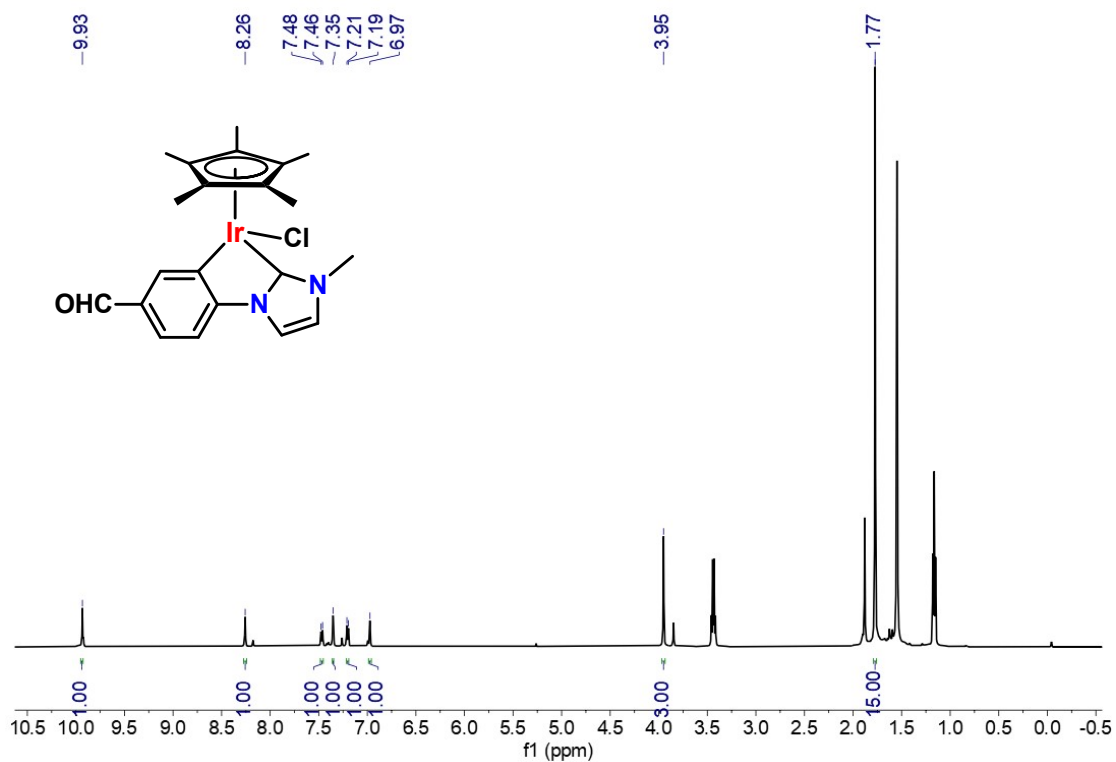


Figure S13.  $^1\text{H}$  NMR spectra of **3**

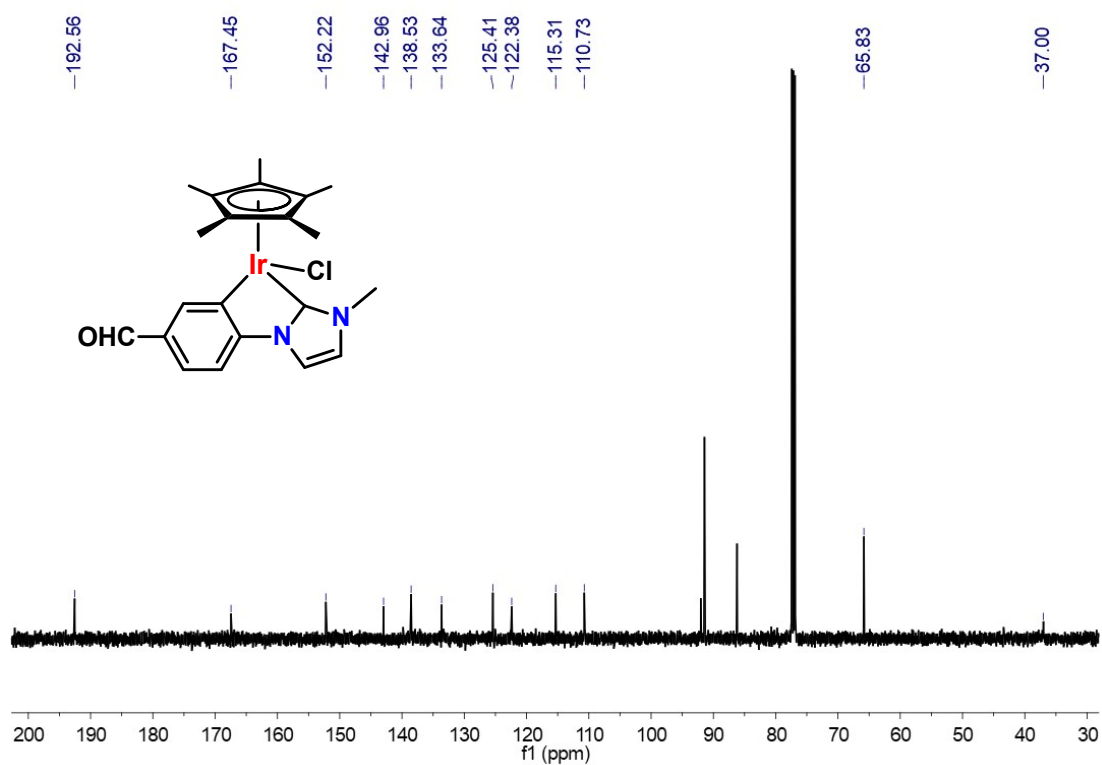


Figure S14.  $^{13}\text{C}$  NMR spectra of **3**



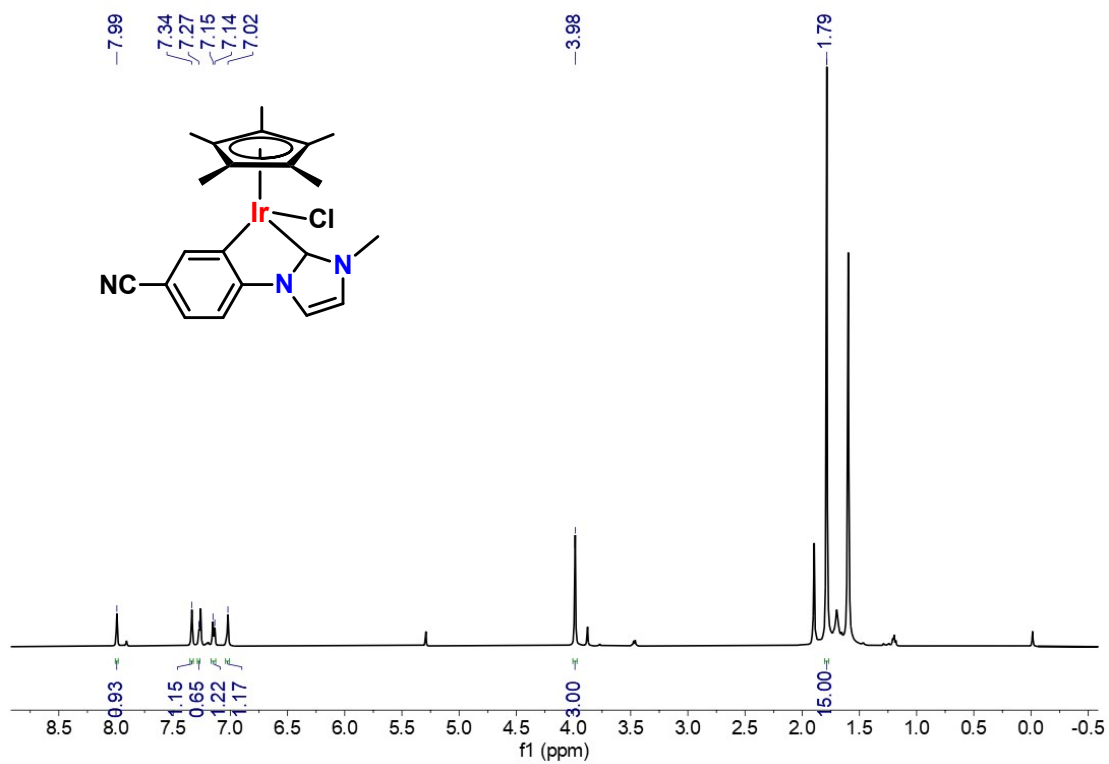


Figure S15.  $^1\text{H NMR}$  spectra of 4

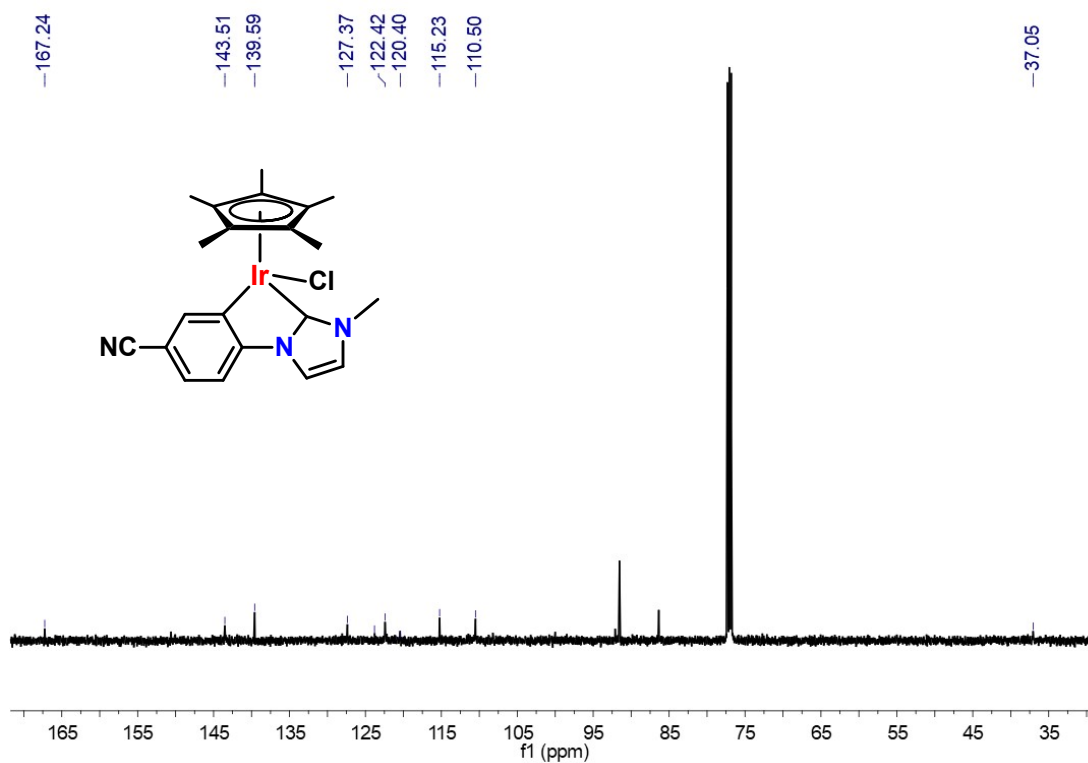


Figure S16.  $^{13}\text{C NMR}$  spectra of 4