

Figure S 1. ¹H NMR spectrum for 1,8-naphthyridine-2,7-dicarbaldehyde (in CDCl₃).

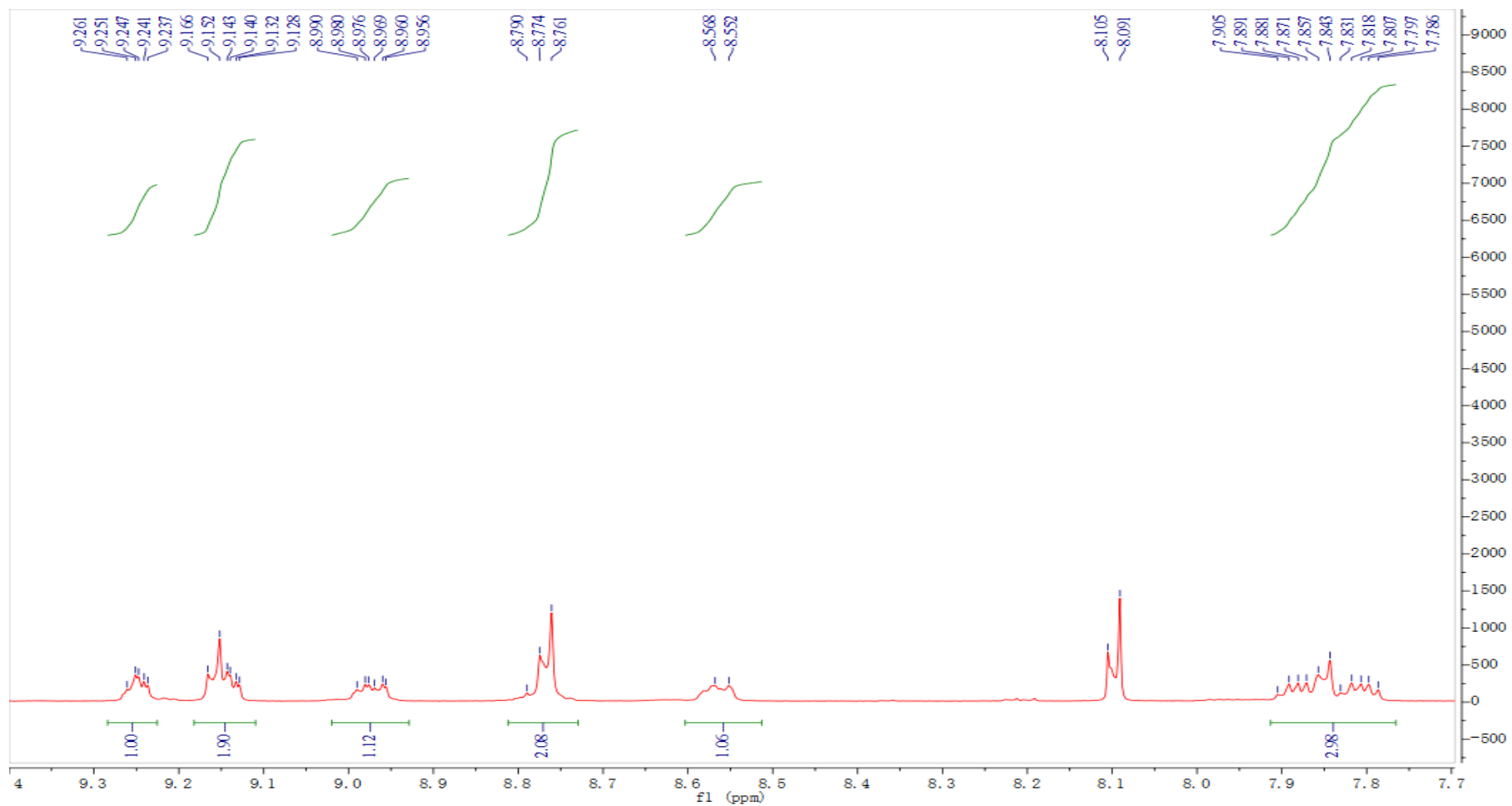


Figure S 2. ^1H NMR spectrum for L (in $\text{DMSO-}d_6$ and a small amount of CDCl_3).

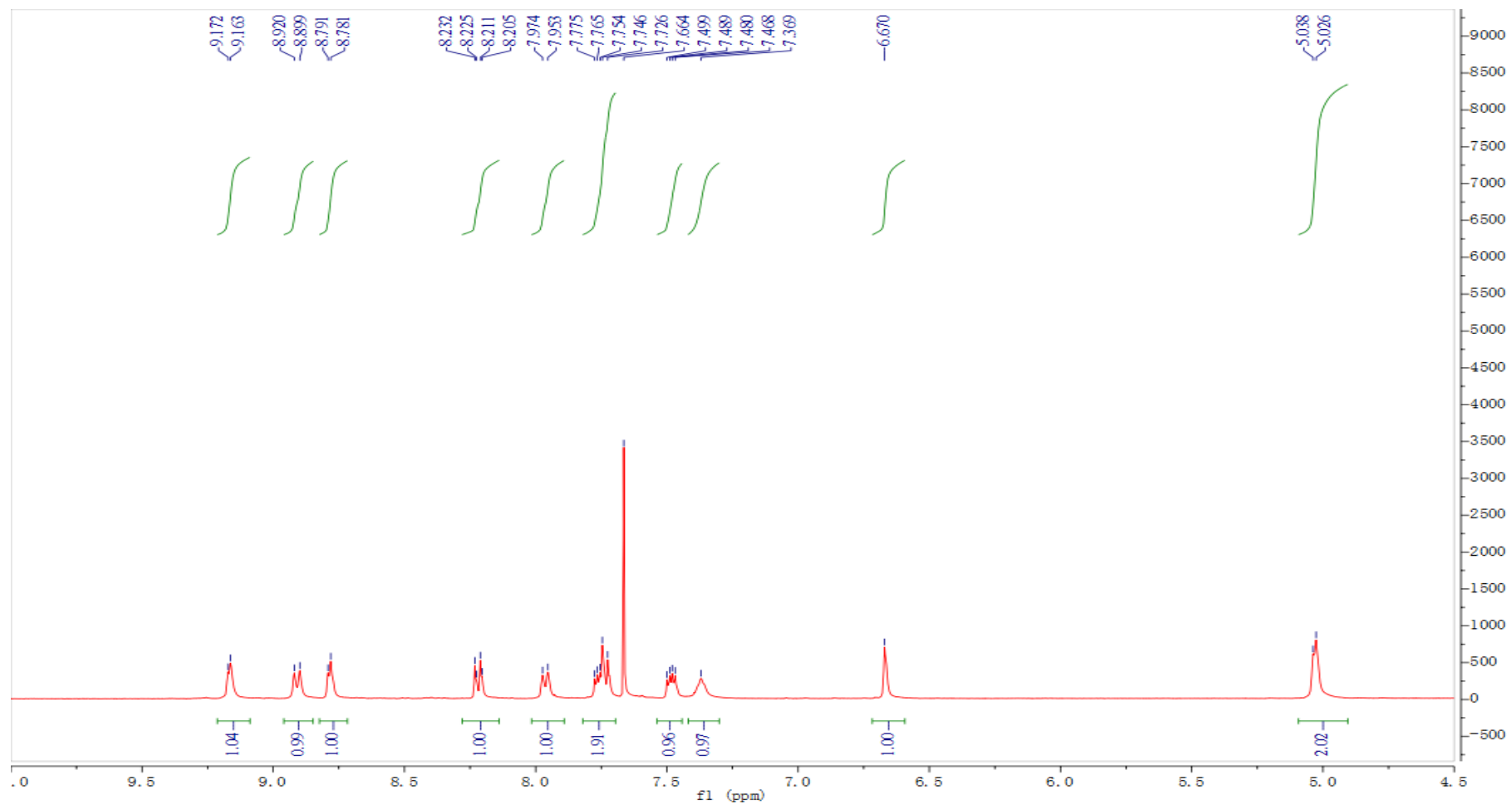


Figure S 3. ^1H NMR spectrum for H_2L (in $\text{DMSO-}d_6$ and a small amount of CDCl_3).

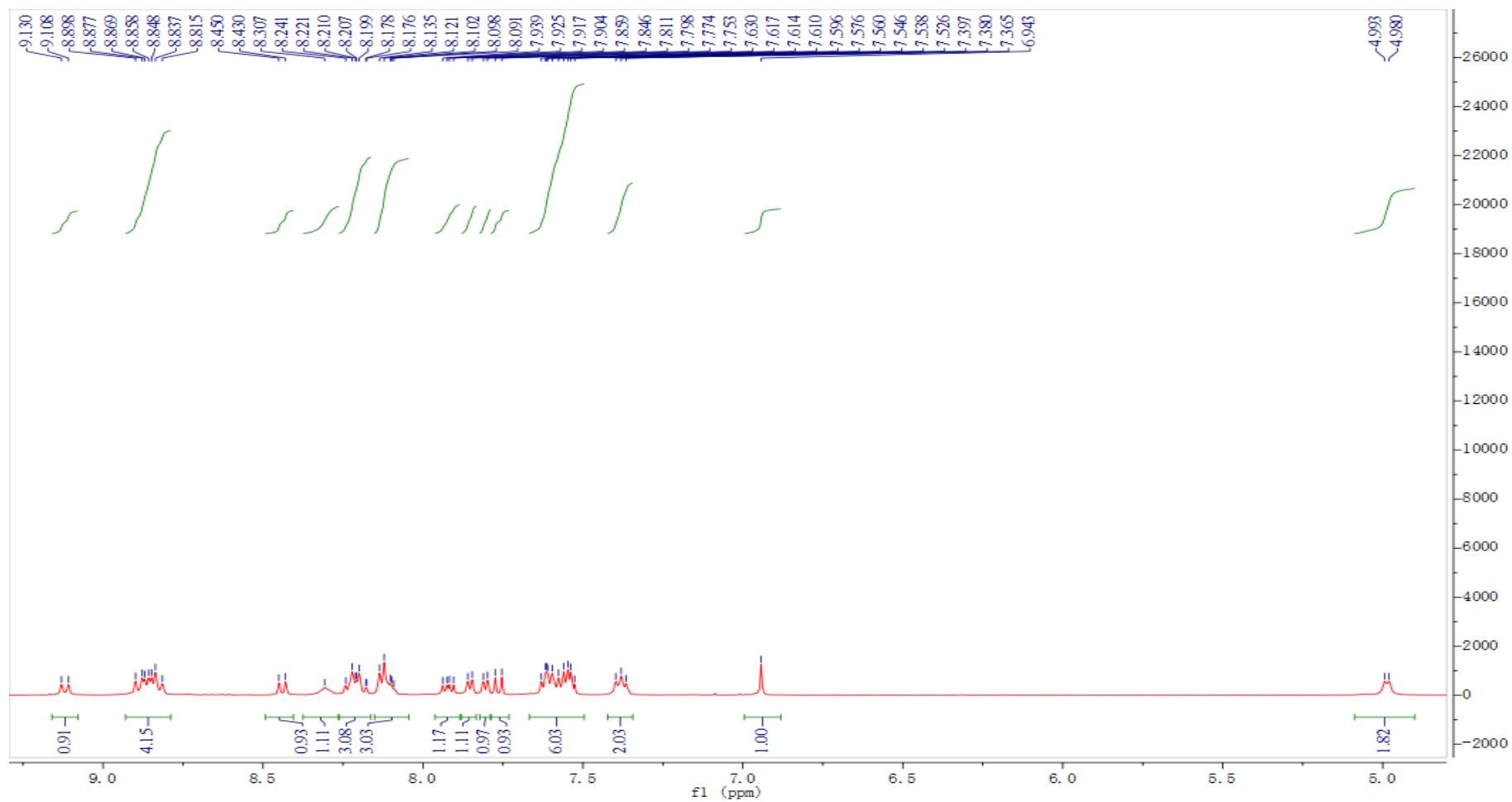


Figure S 4. ^1H NMR spectrum for $[\{\text{Ru}(\text{bpy})_2\}_2(\mu_2\text{-H}_2\text{L})](\text{PF}_6)_4$ (in $\text{DMSO-}d^6$).

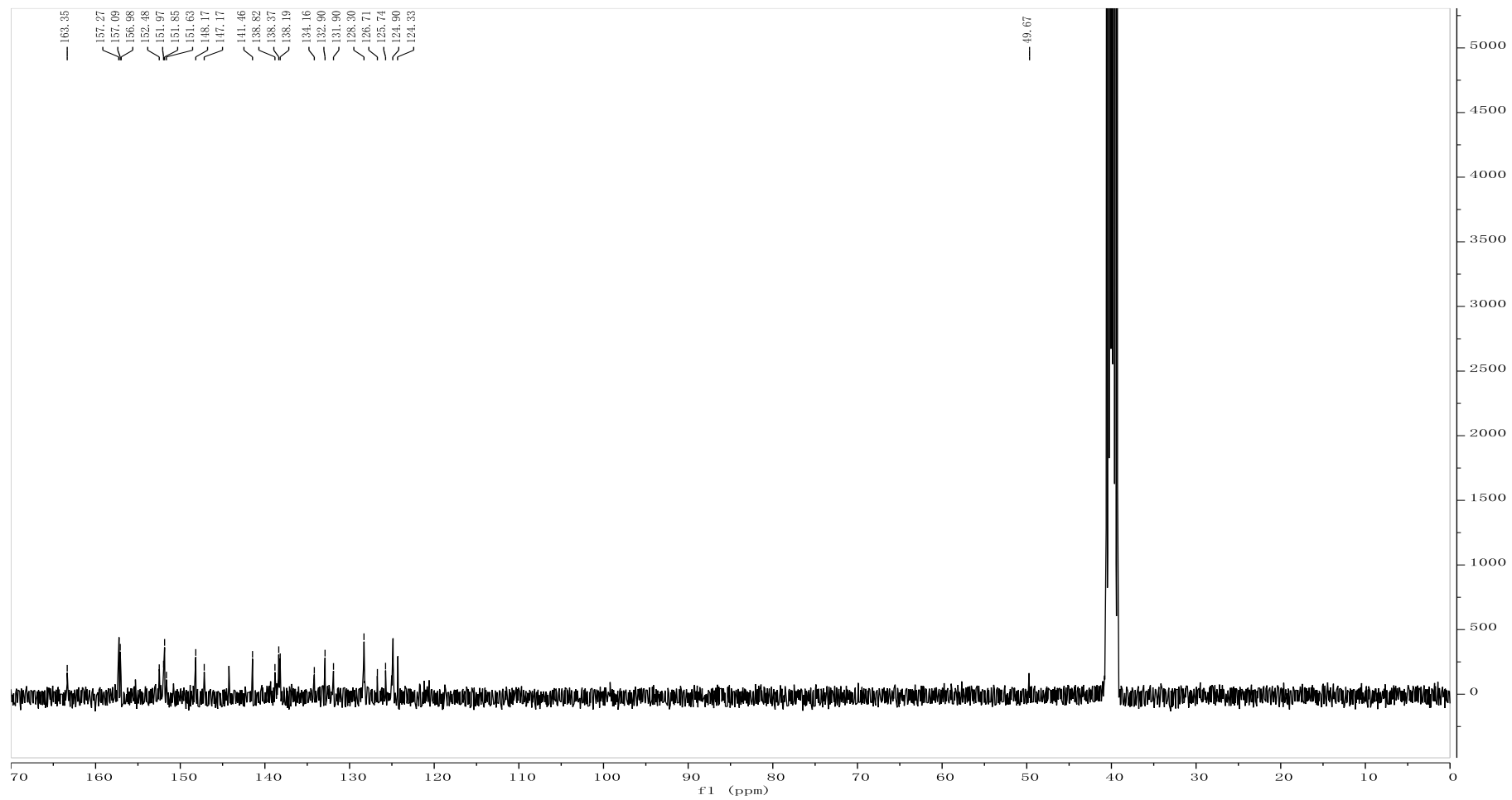


Figure S 5 ^{13}C NMR spectrum for $[\{\text{Ru}(\text{bpy})_2\}_2(\mu_2\text{-H}_2\text{L})](\text{PF}_6)_4$ (in $\text{DMSO-}d^6$).

Generic Display Report

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Instrument amaZon SL

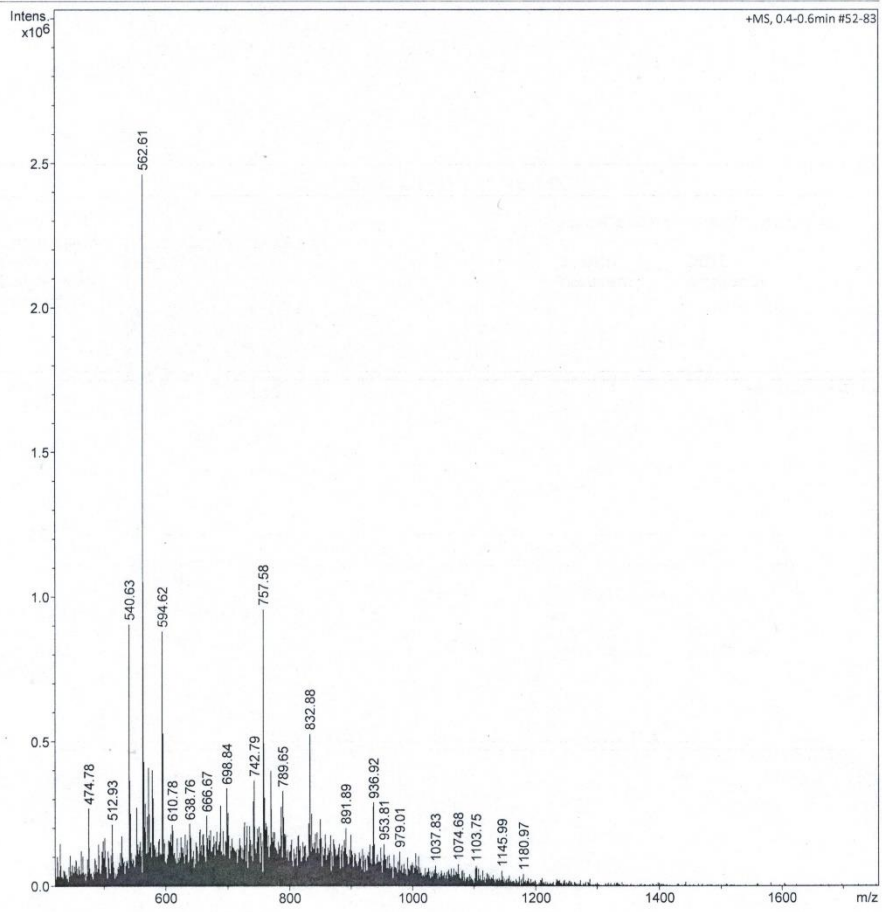


Figure S 6. ESI-MS for L.

Generic Display Report

Analysis Info

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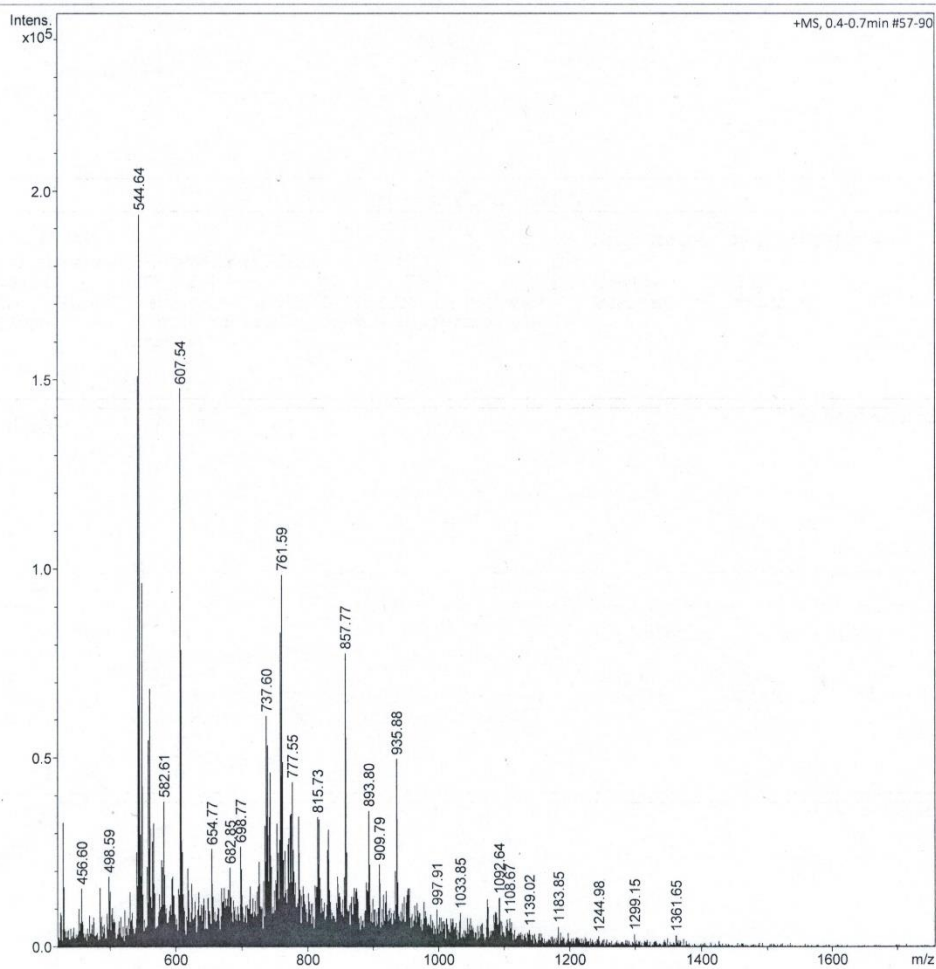
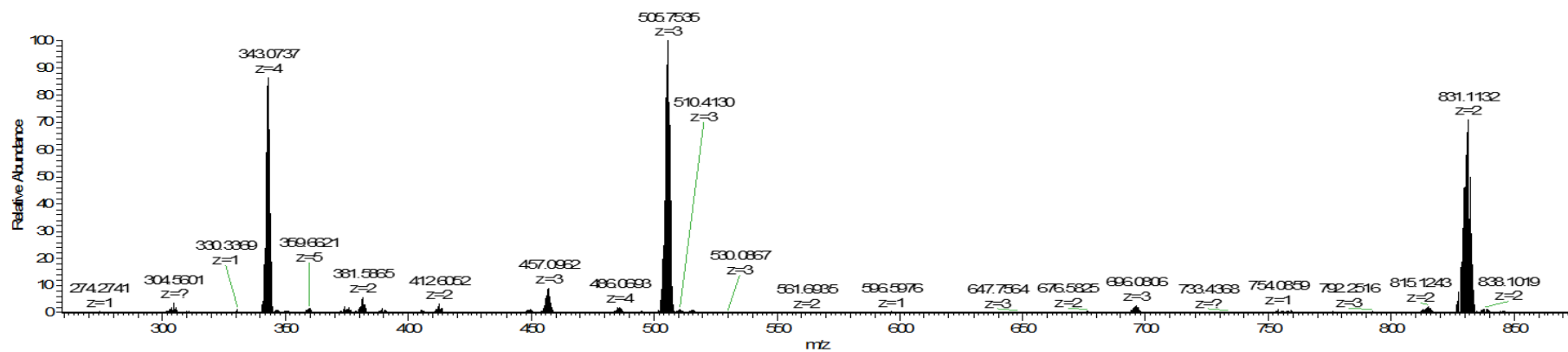


Figure S 7. ESI-MS for H₂L.

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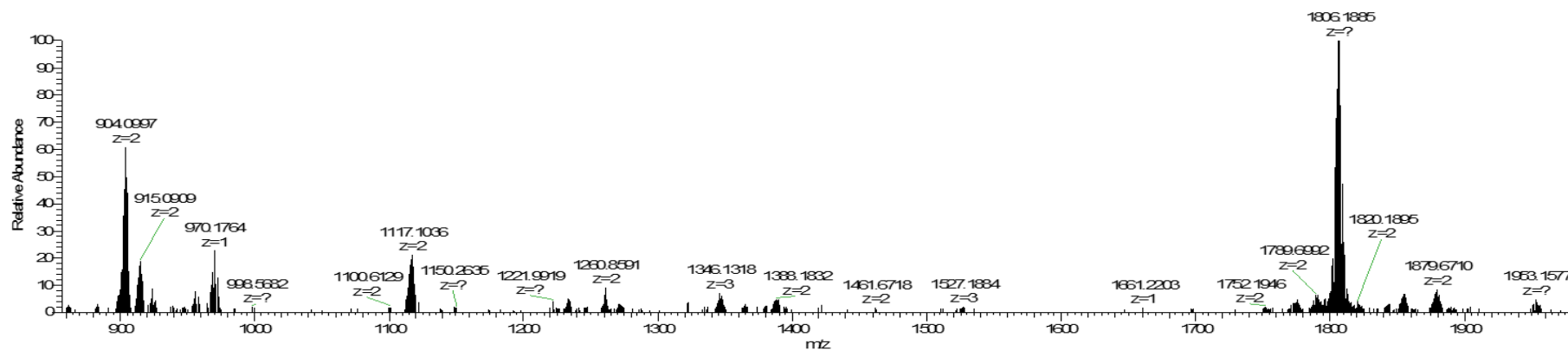


Figure S 8. ESI-HRMS for $[\{\text{Ru}(\text{bpy})_2\}_2(\mu_2\text{-H}_2\text{L})](\text{PF}_6)_4$

Generic Display Report

Analysis Info

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Sample Name CU
Comment

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Operator BDAL
Instrument amaZon SL

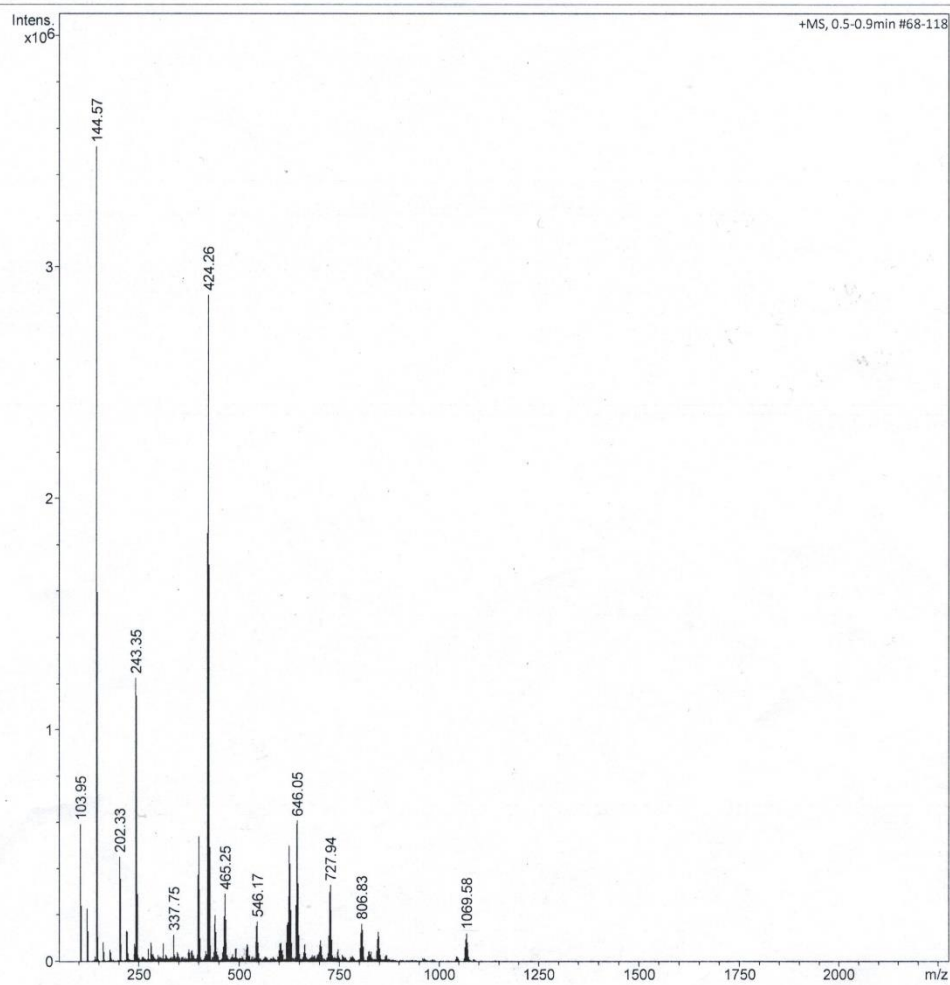


Figure S 9. ESI-MS for $[(\{\text{Ru}(\text{bpy})_2\}_2(\mu_2\text{-H}_2\text{L}))_3\text{Cu}_2](\text{PF}_6)_{12}(\text{ClO}_4)_4$

Generic Display Report

Analysis Info

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Operator BDAL
Instrument amaZon SL

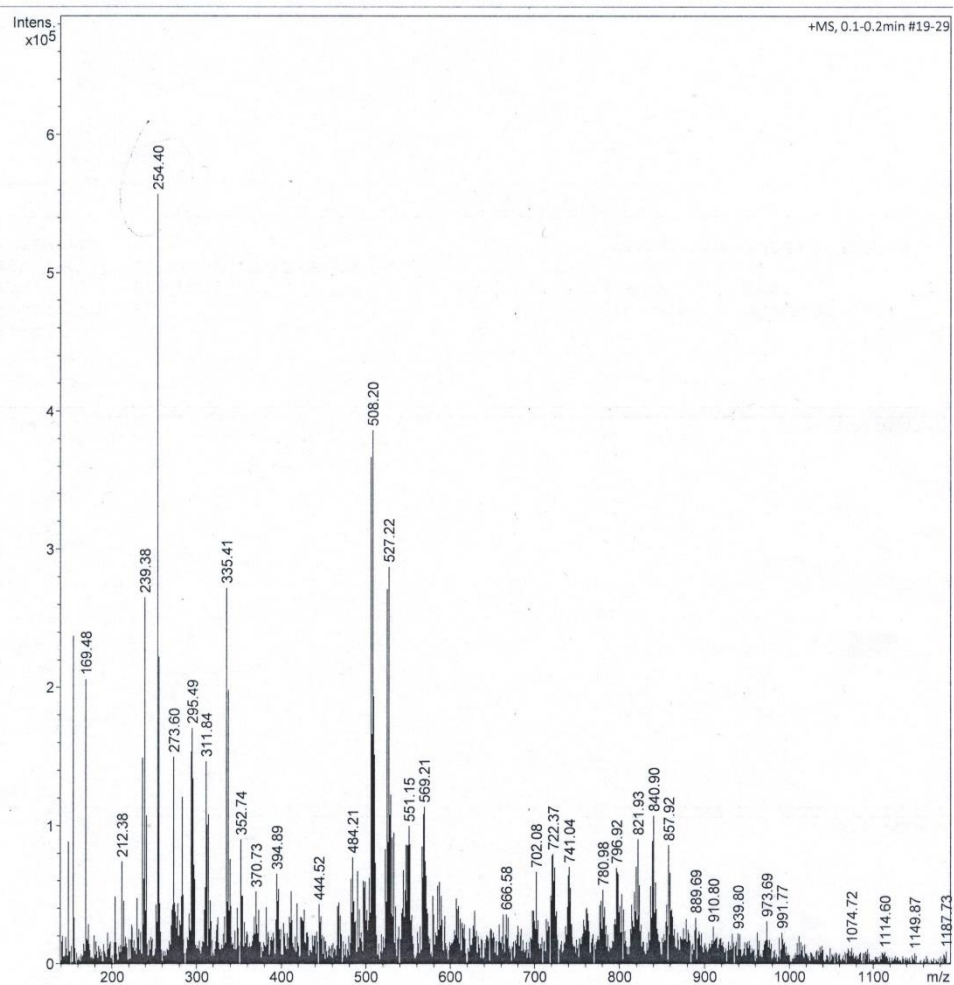


Figure S 10. ESI-MS for $[(\text{Ru}(\text{bpy})_2)_2(\mu_2\text{-H}_2\text{L})\text{Fe}](\text{PF}_6)_4(\text{ClO}_4)_3$

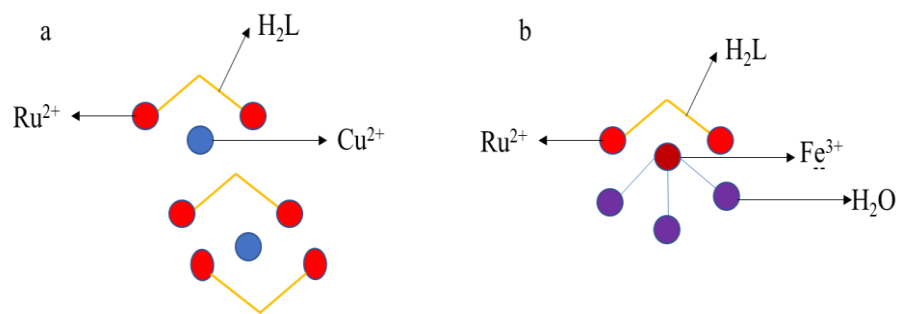


Figure S 11. The “sandwich” of hypothetical structures of new product of Cu²⁺(a) and hypothetical structures of new product of Fe³⁺(b)