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Supporting Information

Synthesis, Characterization, Investigation of Capacitance and Redox Properties of Self-assembled Phe-Phe with Ferrocene Conjugates

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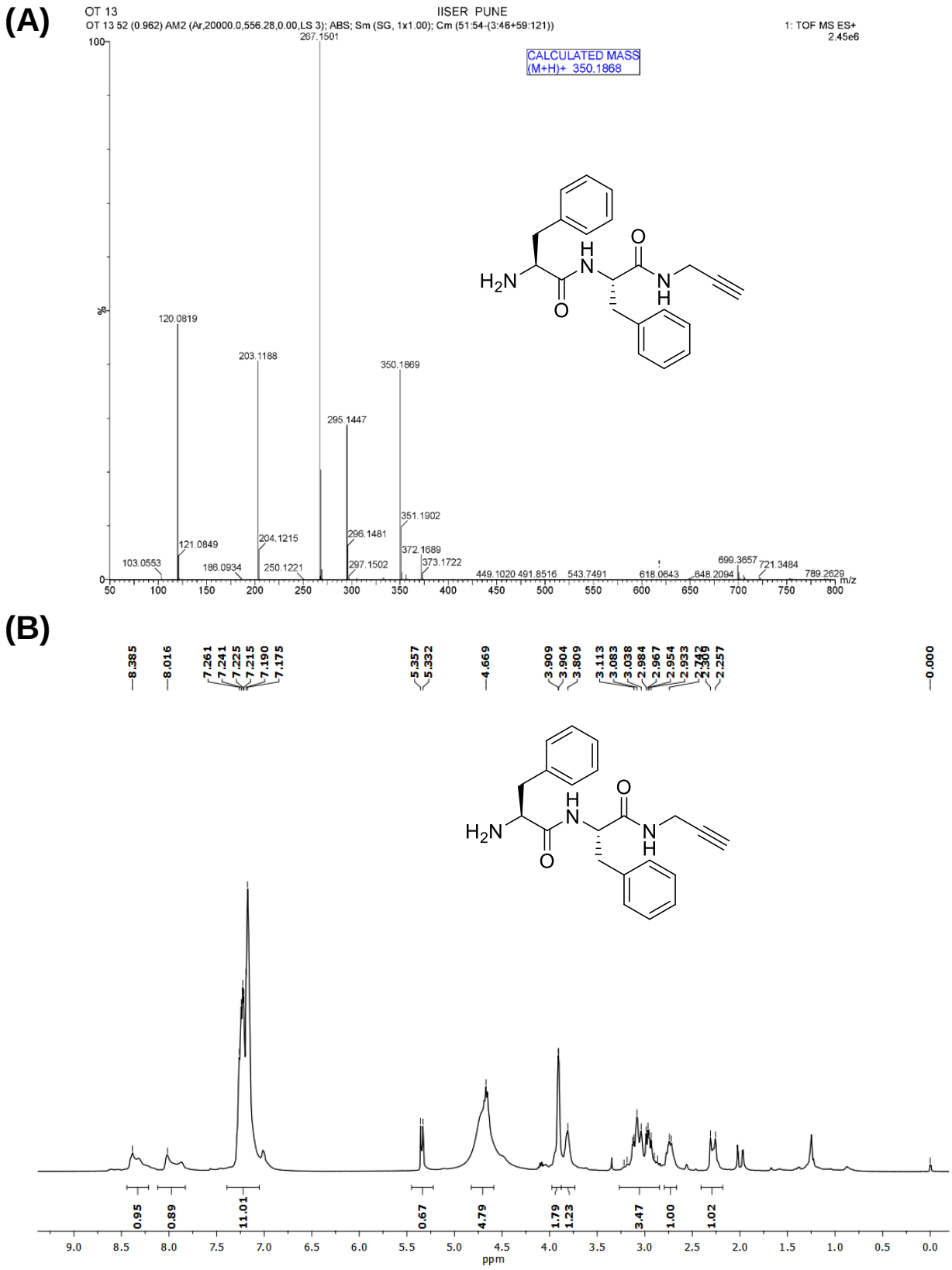

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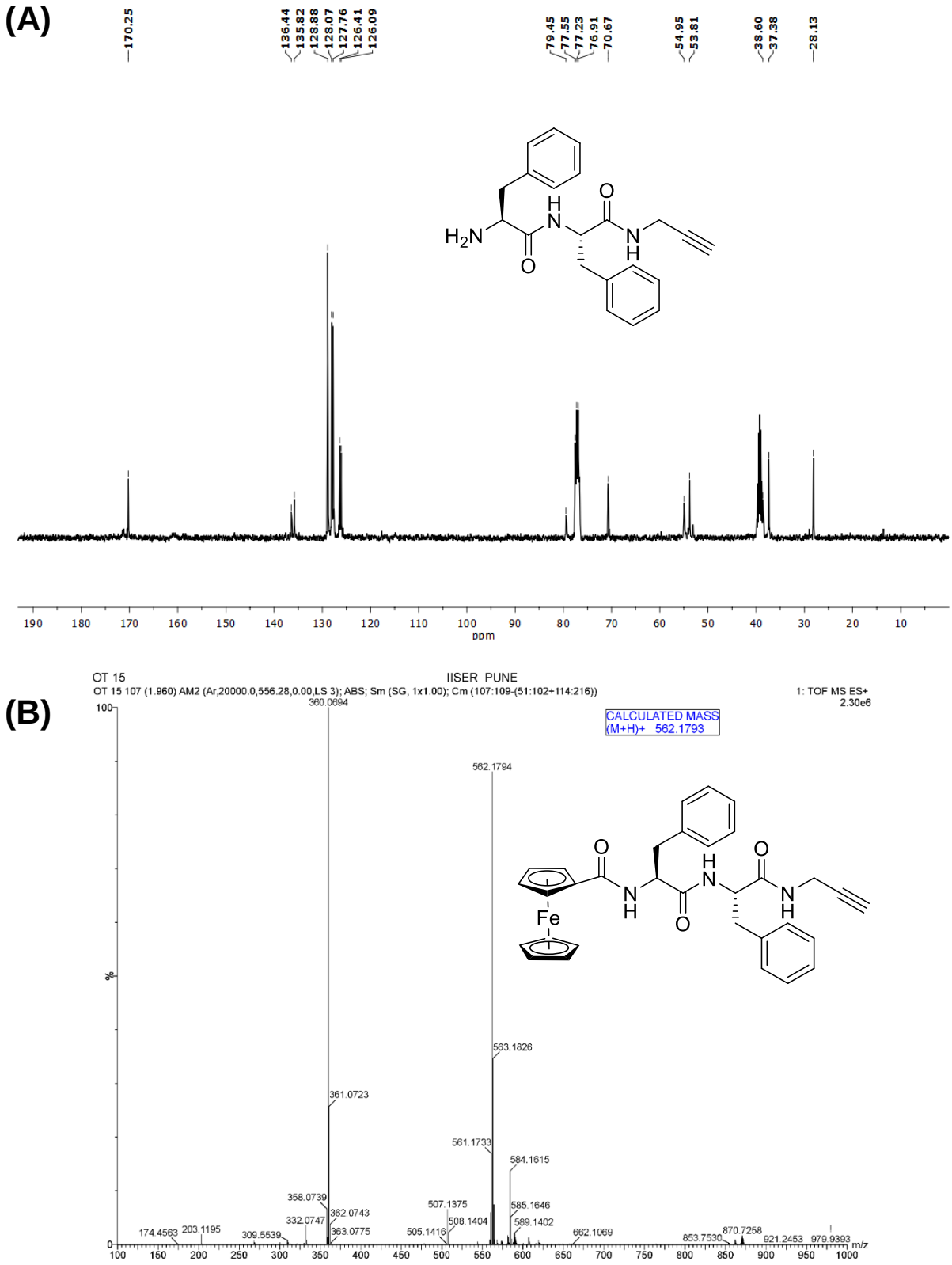

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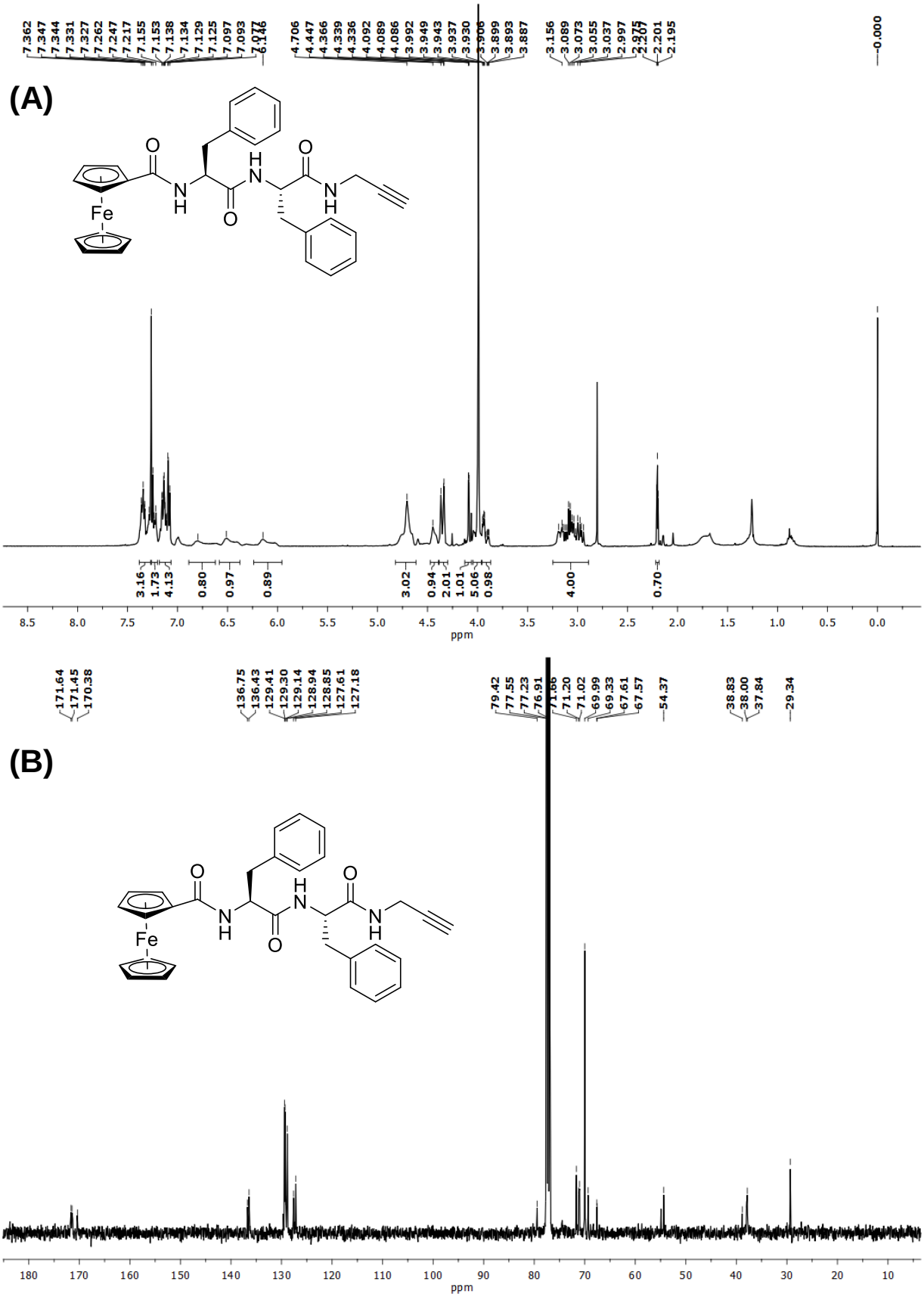

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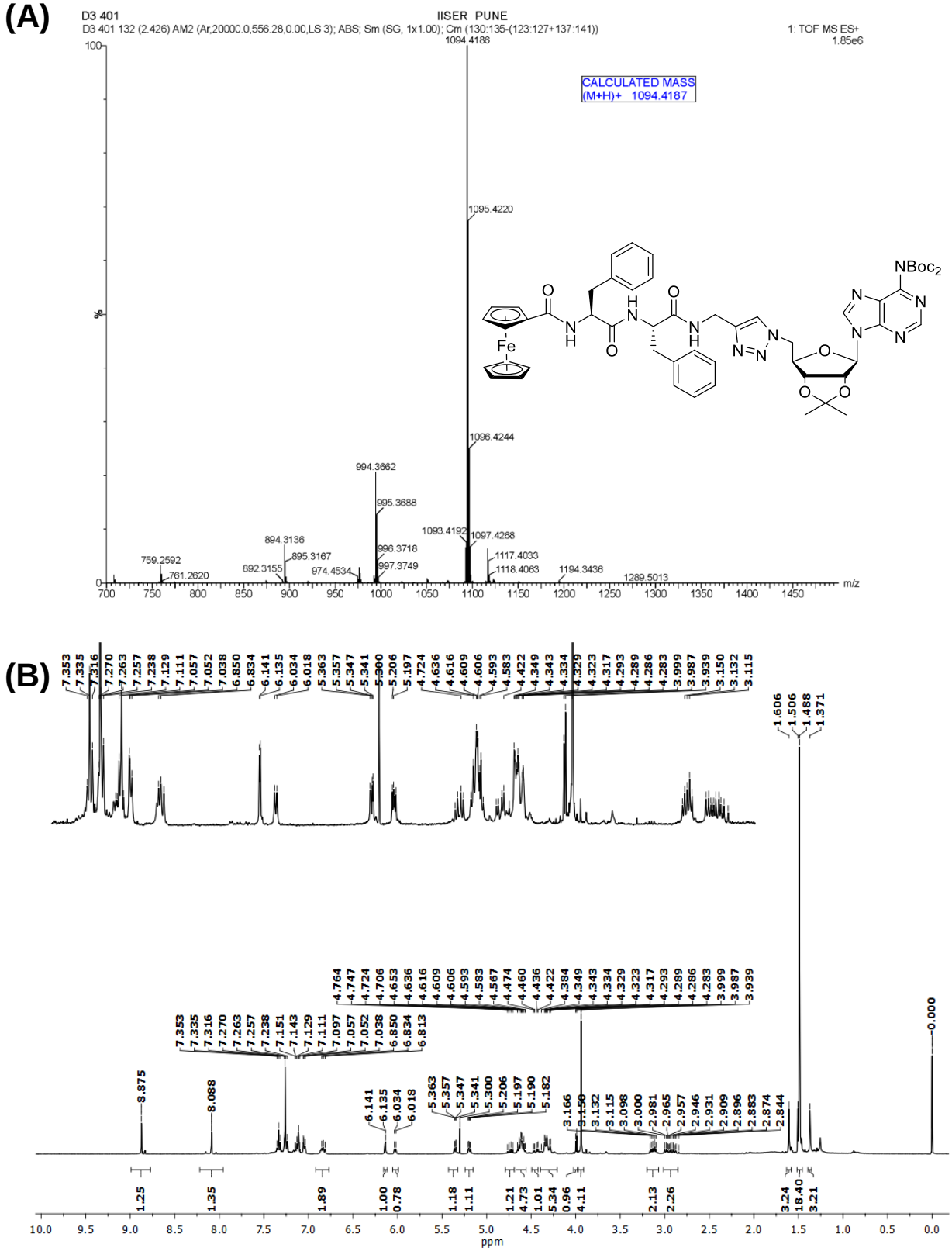

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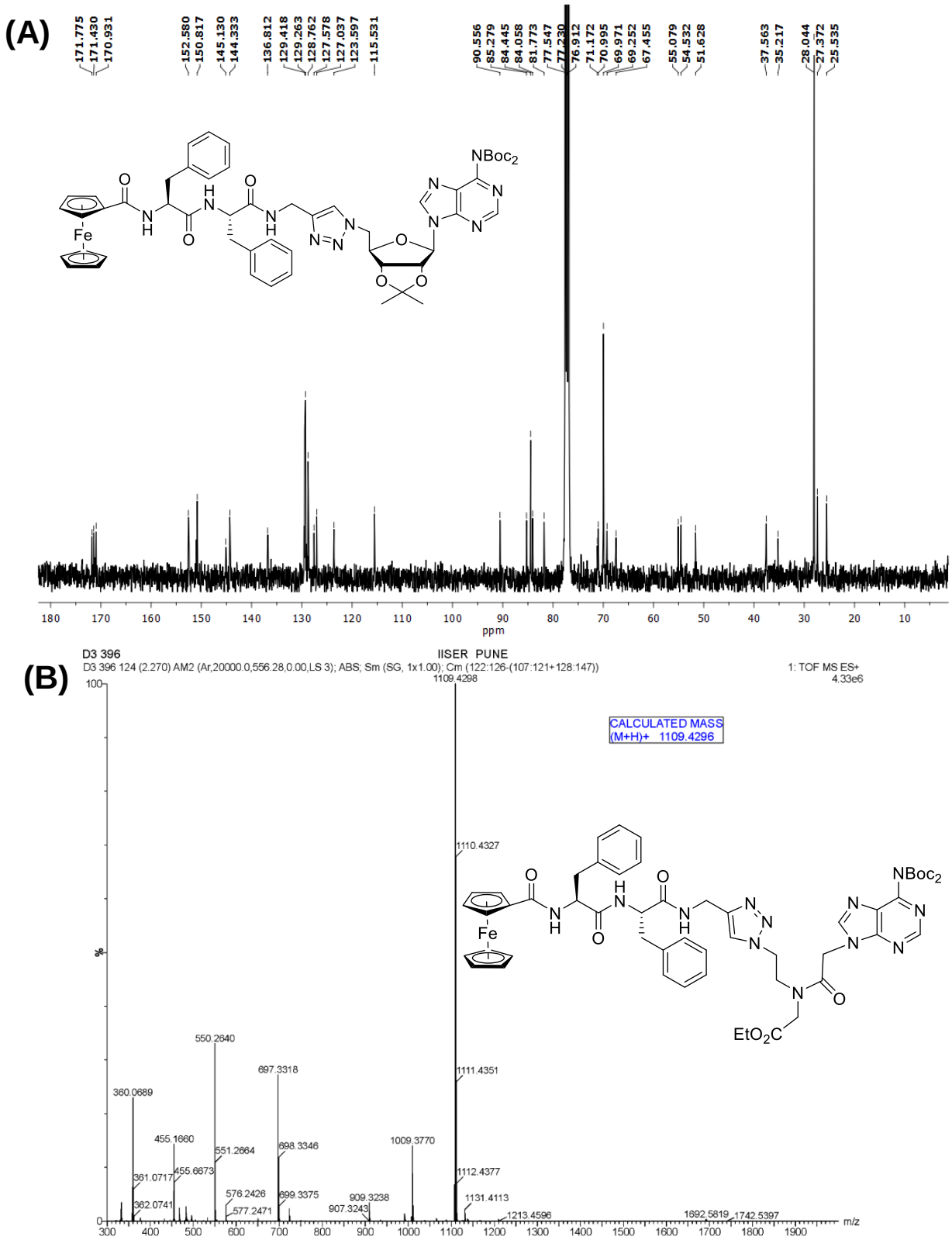

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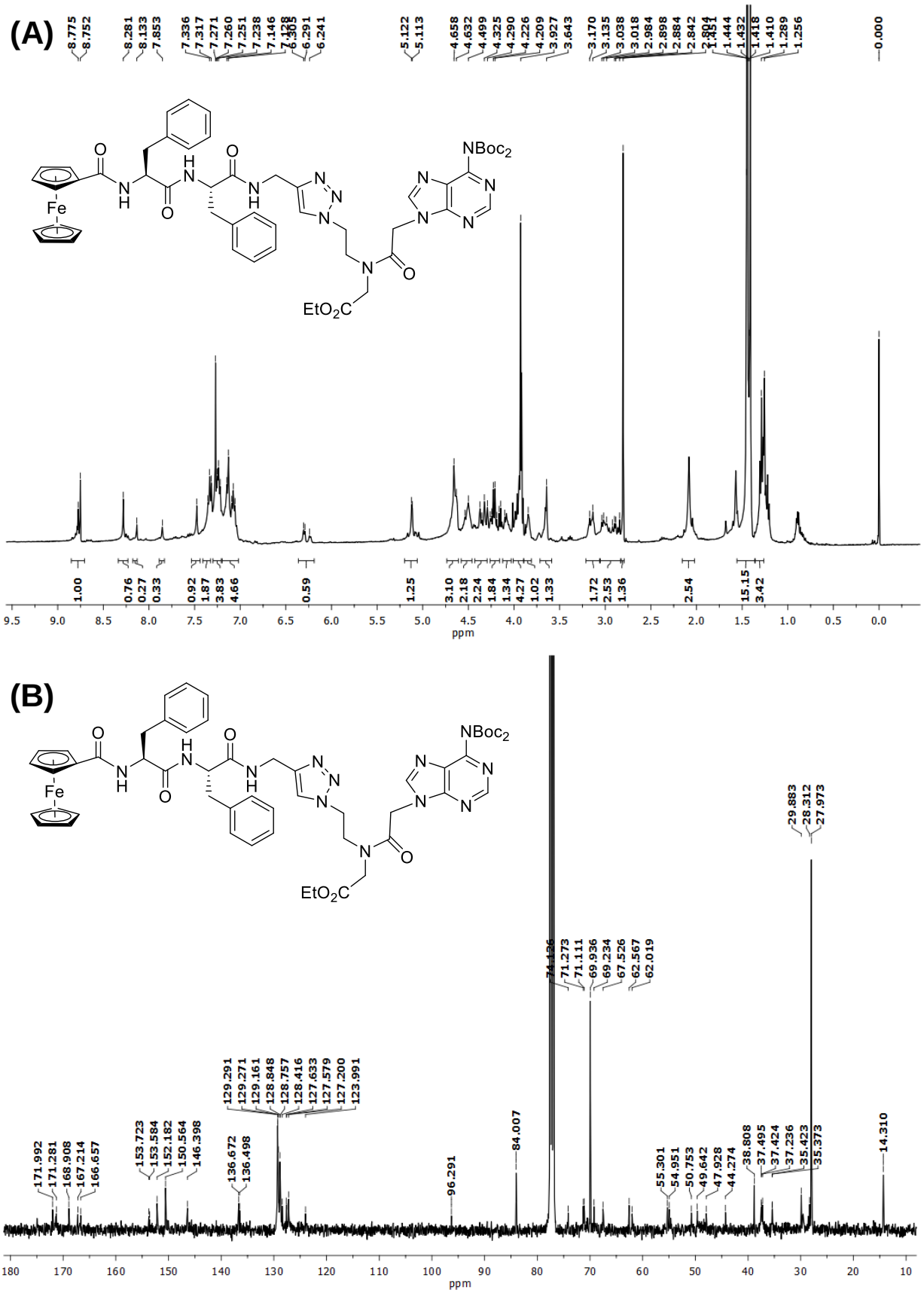

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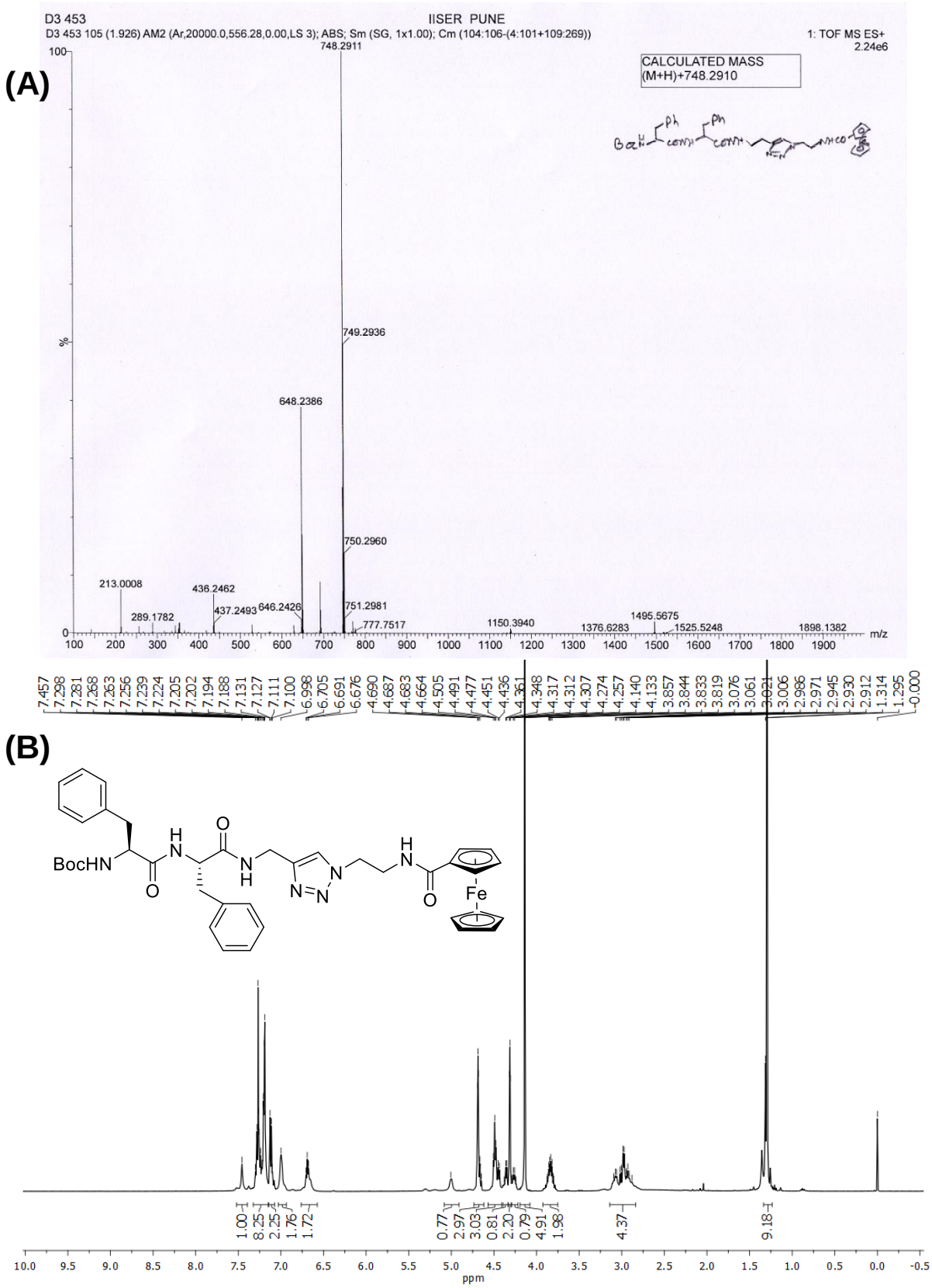

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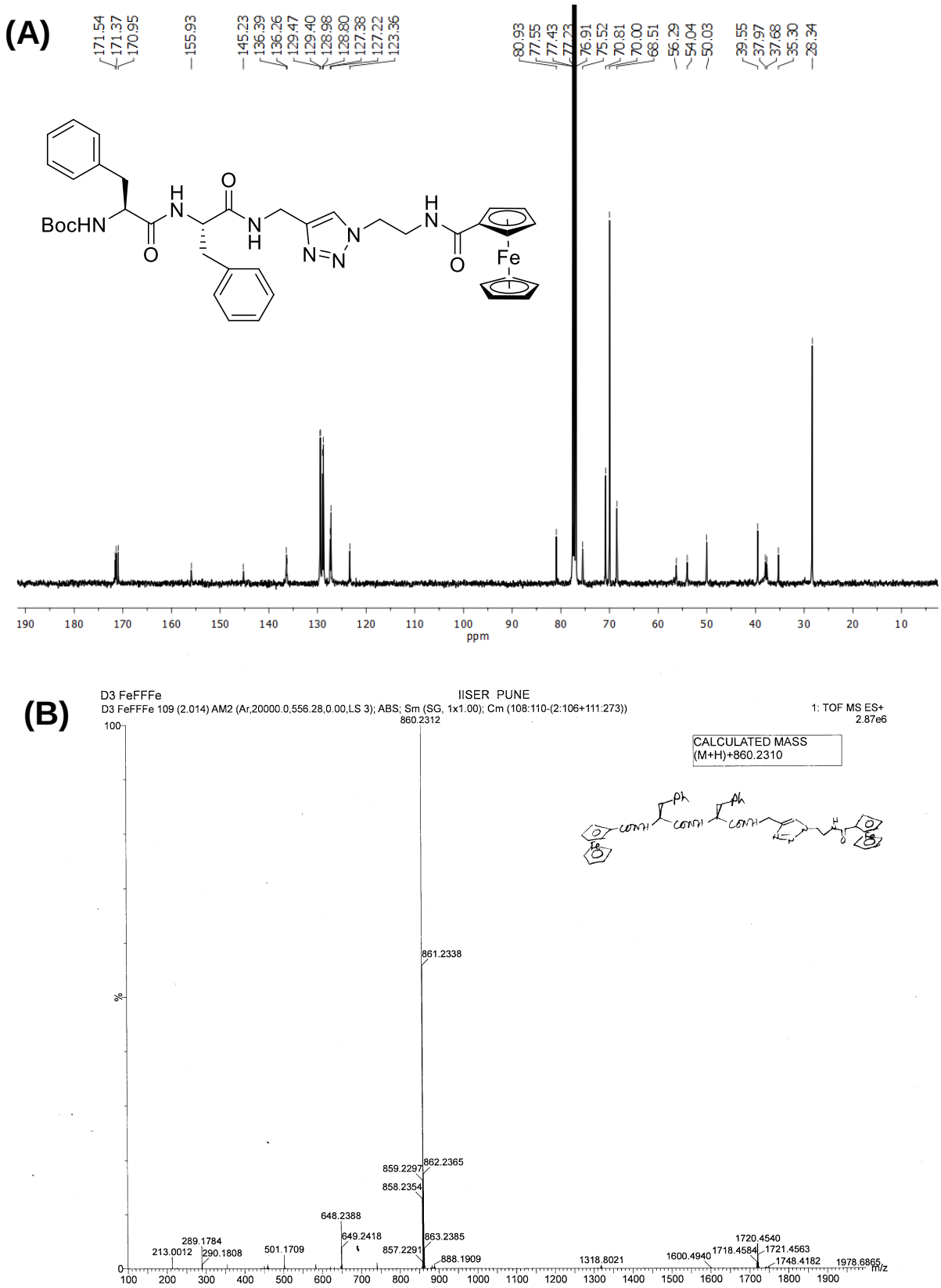

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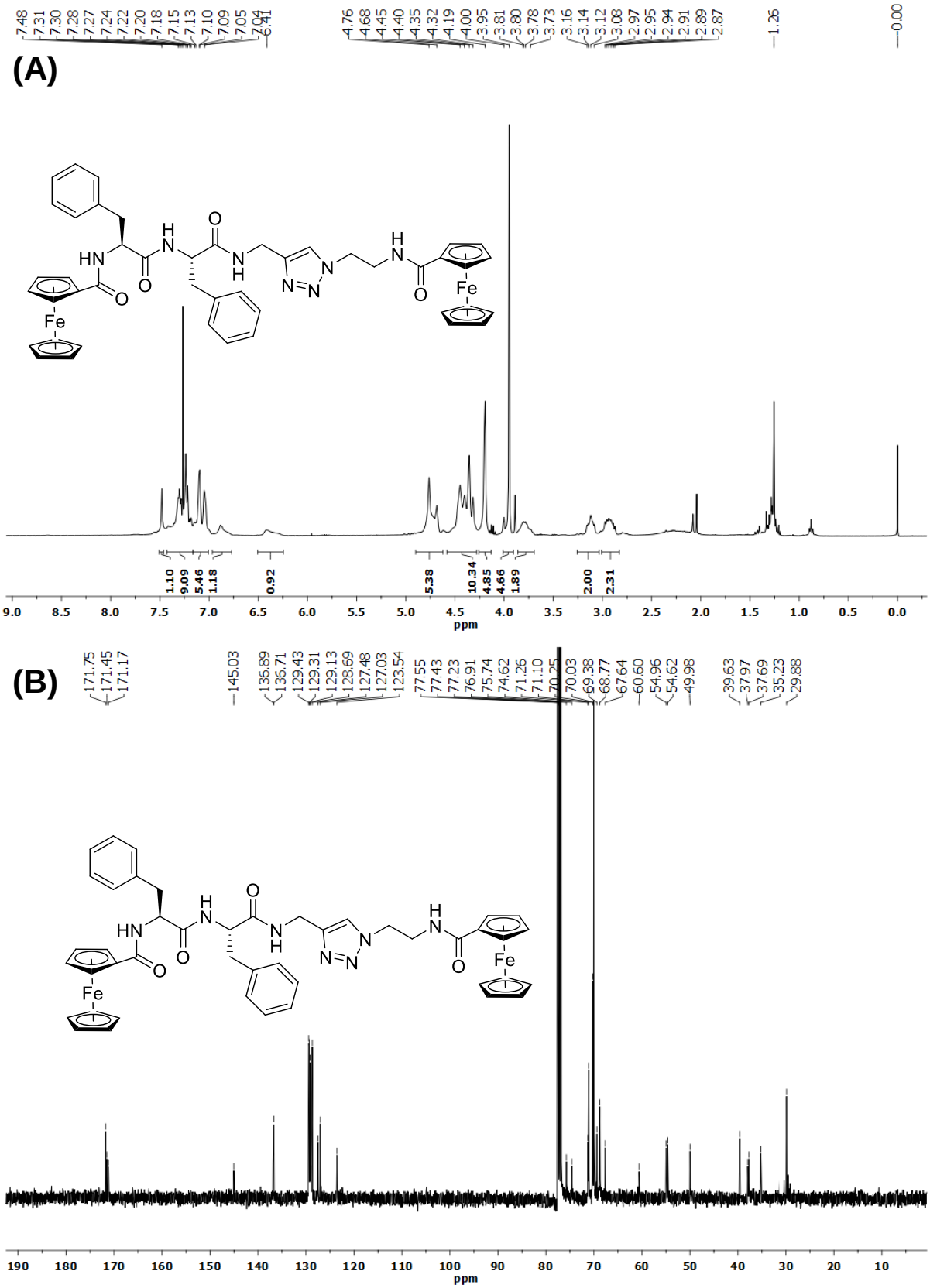

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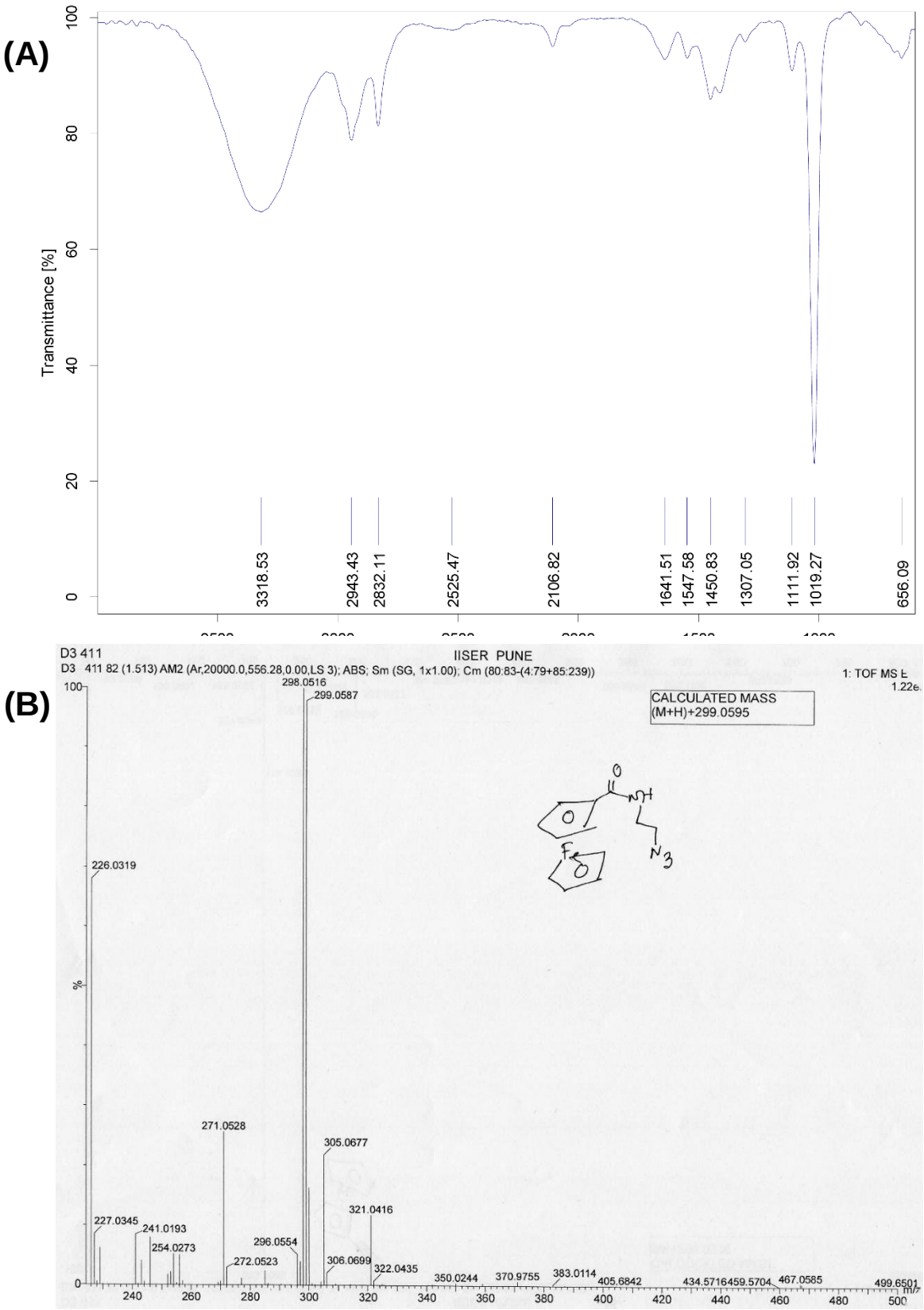

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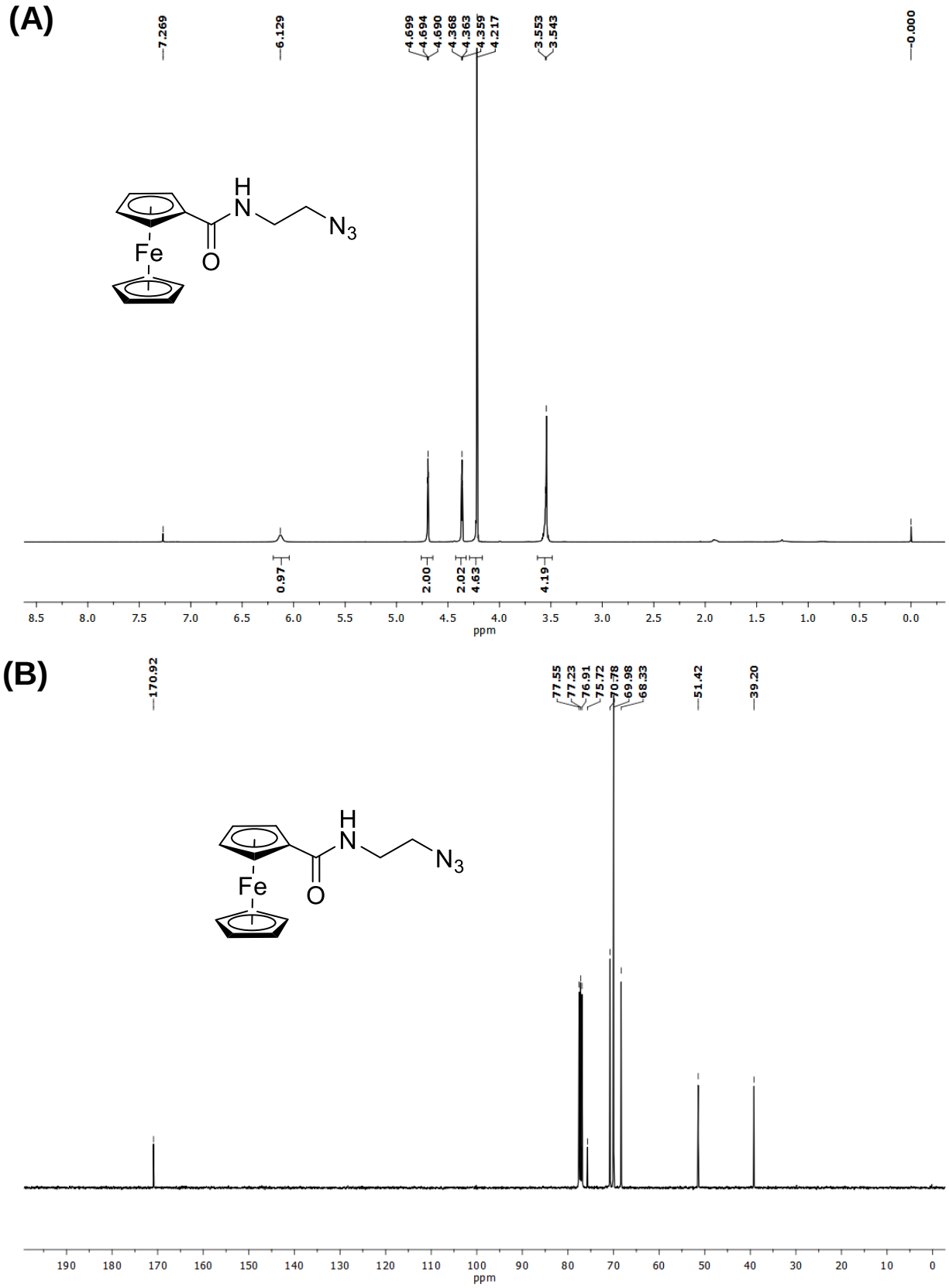
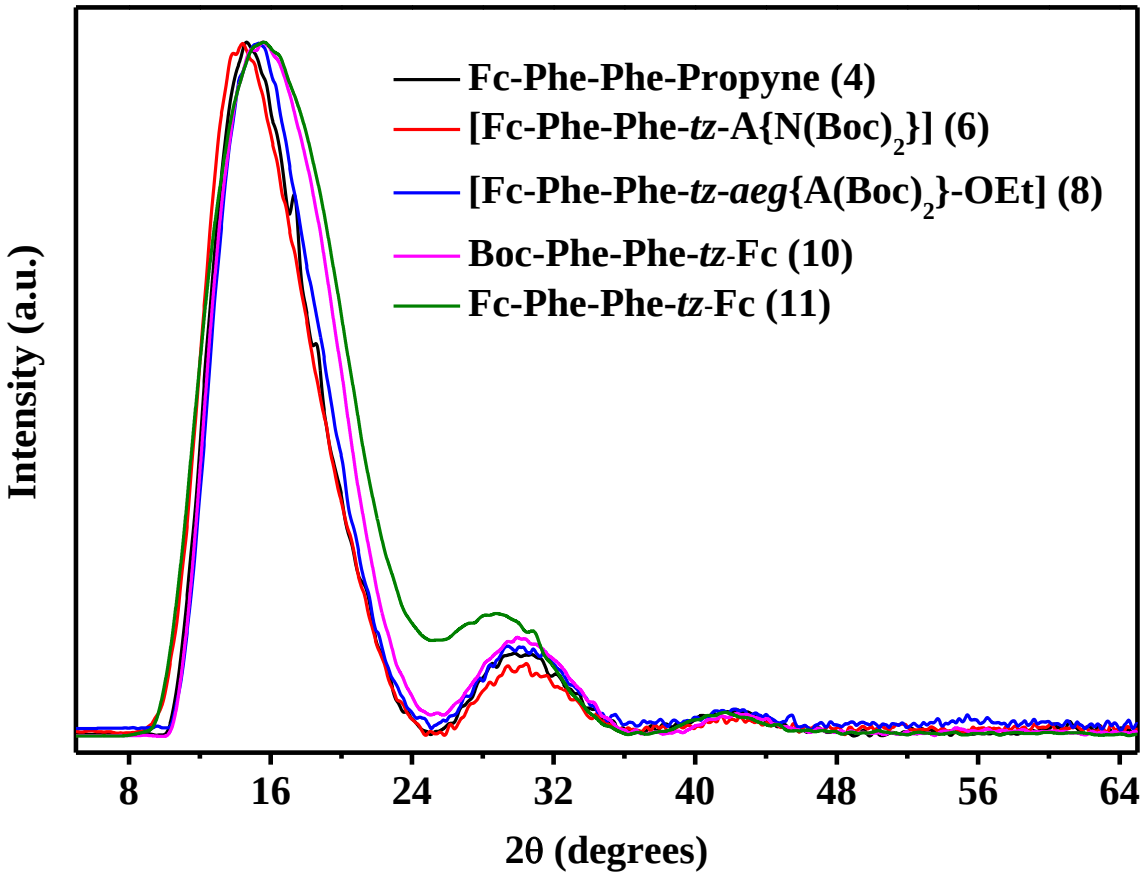


Figure S11: (A) ^{1}H-NMR and (B) ^{13}C-NMR spectra of **9**.



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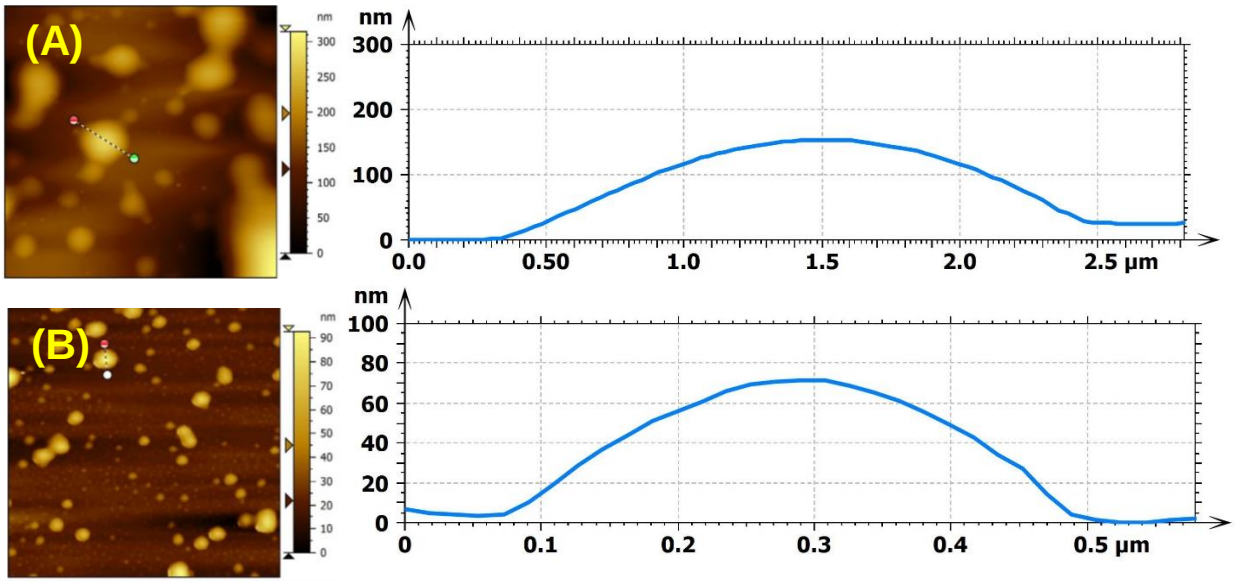


Figure S13: Height profiles from AFM images of (A) Boc-Phe-Phe-*tz*-Fc **(10)** and (B) Fc-Phe-Phe-*tz*-Fc **(11)**.

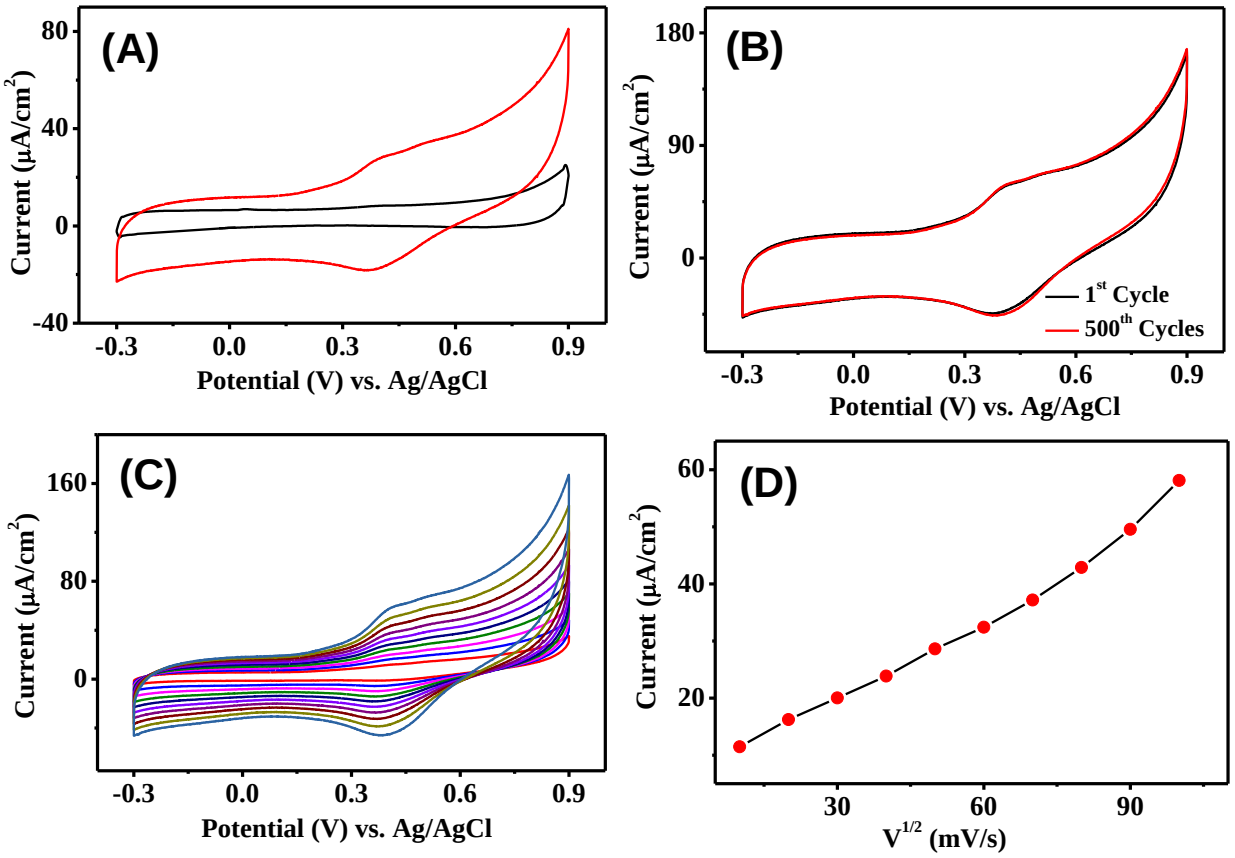
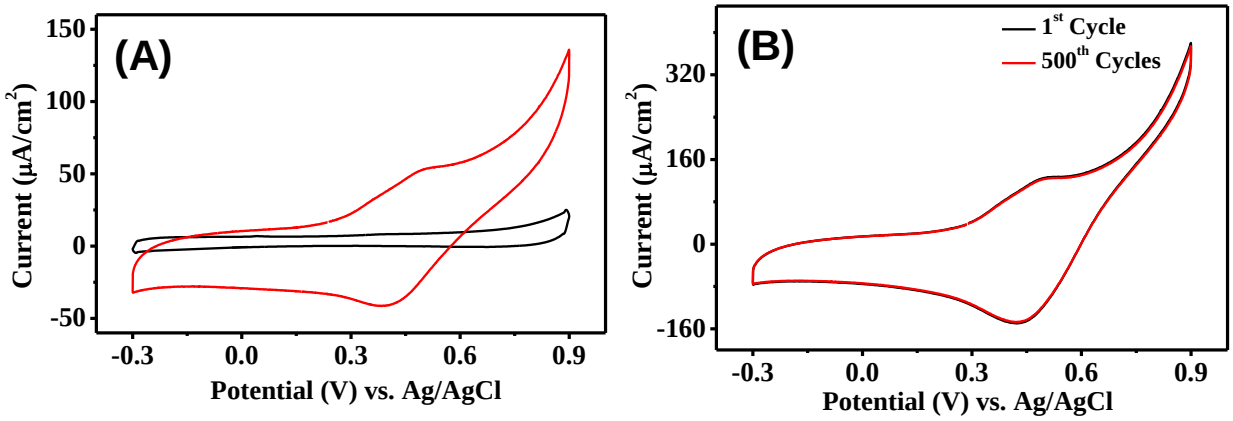


Figure S14: Cyclic voltammograms of Fc-Phe-Phe-*tz*-A$^{N(Boc)2}$ **(6)** supported on Toray Carbon electrode in 0.1 M potassium phosphate buffer electrolytes at pH = 7.4 and 0.1 M KCl (A) at a scan rate of 50 mV/s; (B) at a scan rate of 100 mV/s of 1st and 500th cycles; (C) and (D) scan rate effect from 10 mV/s to 100 mV/s.



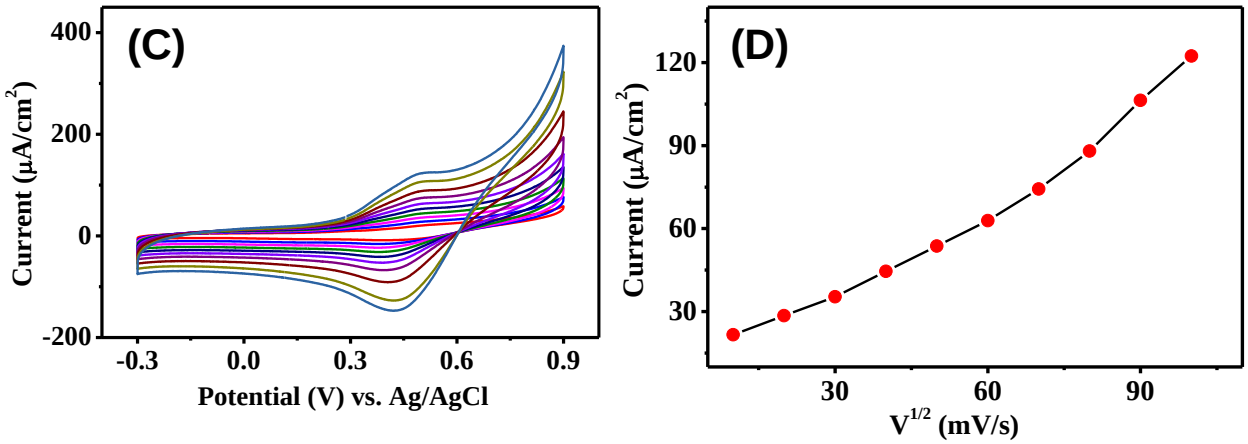


Figure S15: Cyclic voltammograms of Fc-Phe-Phe-*tz*-*aeg*{$A^{(Boc)2}$}-OEt **(8)** supported on Toray Carbon electrode in 0.1 M potassium phosphate buffer electrolyte at pH = 7.4 and 0.1 M KCl (A) at a scan rate of 50 mV/s; (B) at a scan rate of 100 mV/s of 1st and 500th cycles; (C) and (D) scan rate effect from 10 mV/s to 100 mV/s.

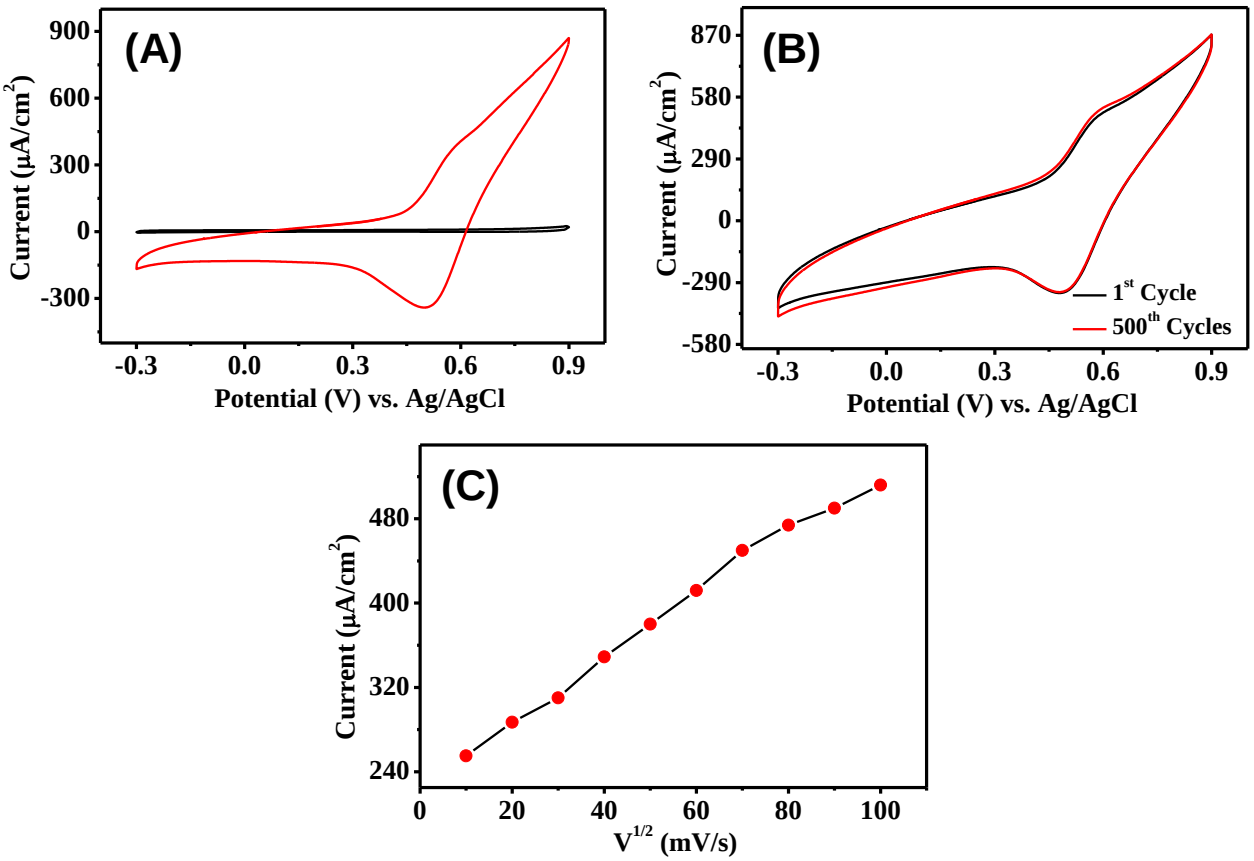


Figure S16: Cyclic voltammograms of Boc-Phe-Phe-*tz*-Fc **(10)** supported on Toray Carbon electrode in 0.1 M potassium phosphate buffer electrolytes at pH = 7.4 and 0.1 M KCl (A) at a scan rate of 50 mV/s; (B) at a scan rate of 100 mV/s of 1st and 500th cycles; (C) scan rate effect from 10 mV/s to 100 mV/s.

Table S1: Capacitance values of peptide (without ferrocene) modified Torey carbon electrodes at scan rate (SR) of 50 mV/s. These values were taken from our previous report for comparison between with and without ferrocene (Fc) conjugate.[33]

Peptide used for electrode modification	**Capacitance (μF/cm^2) vs. Ag/AgCl**
Boc-Phe-Phe-*tz*-A$^{N(Boc)2}$-*aeg*-OEt (**6a**)	260.0
Boc-Phe-Phe-*tz*-A^{NHCbz}-*aeg*-OEt (**6b**)	205.8
Boc-Phe-Phe-*tz*-G^{NHiBu}-*aeg*-OEt (**6c**)	617.0
Boc-Phe-Phe-*tz*-T-*aeg*-OEt (**6d**)	342.0
Boc-Phe-Phe-*tz*-*aeg*-OEt (**9**)	500.0
None (unmodified electrode)	90.0

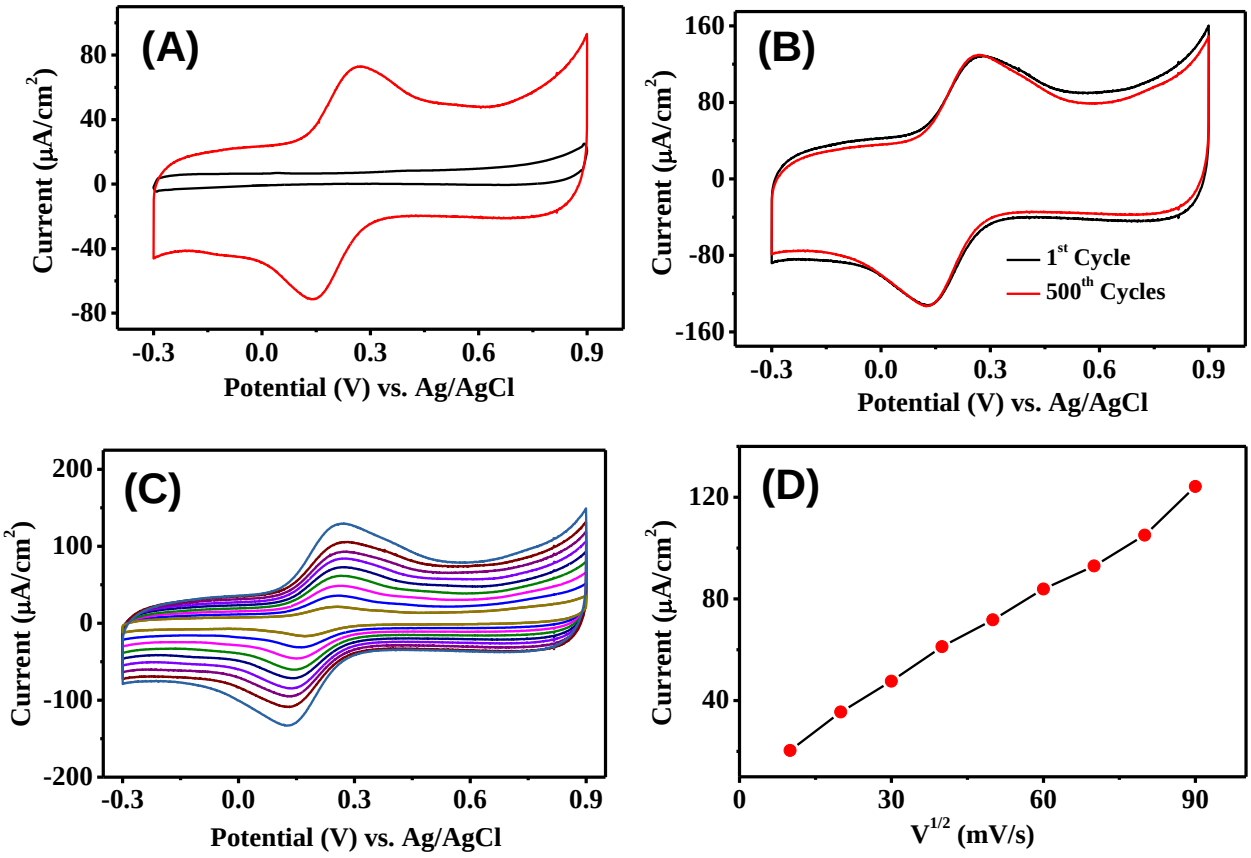


Figure S17: Cyclic voltammograms of Boc-Phe-Phe-Propyne **(1)** supported on Toray Carbon electrode in 0.1 M potassium phosphate buffer electrolytes at pH = 7.4 and 0.1 M KCl (A) at a scan rate of 50 mV/s; (B) at a scan rate of 100 mV/s of 1st and 500th cycles; (C) and (D) scan rate effect from 10 mV/s to 90 mV/s.

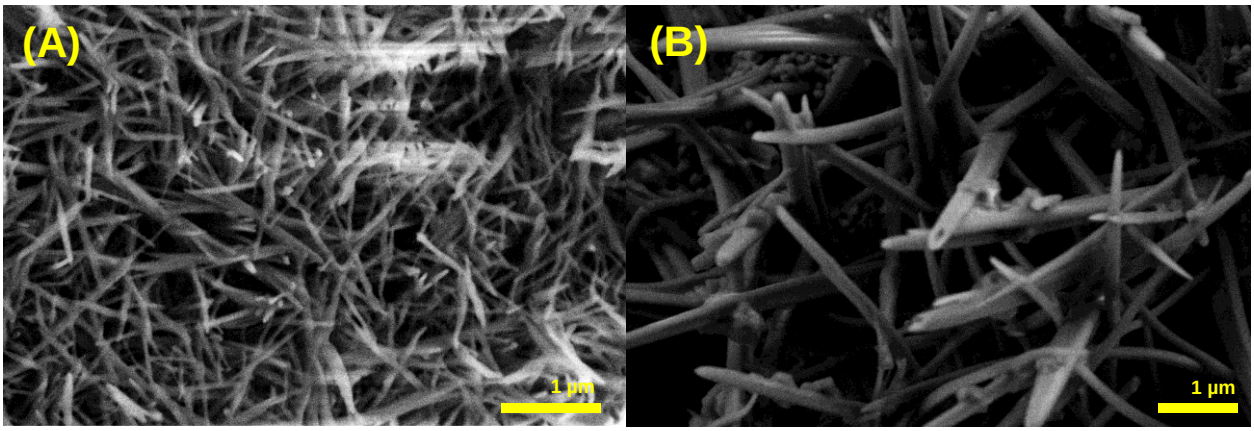


Figure S18: FESEM images of Fc-Phe-Phe-Propyne **(4)** (A) before and (B) after cyclic voltammetry experiment.