Electronic Supplementary information

Geometrically Isomeric Pt(II)/Fe(II)-Based Heterometallo-Supramolecular Polymers with Organometallic Ligands for Electrochromism and Electrochemical Switching of Raman Scattering

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1. Characterizations of L

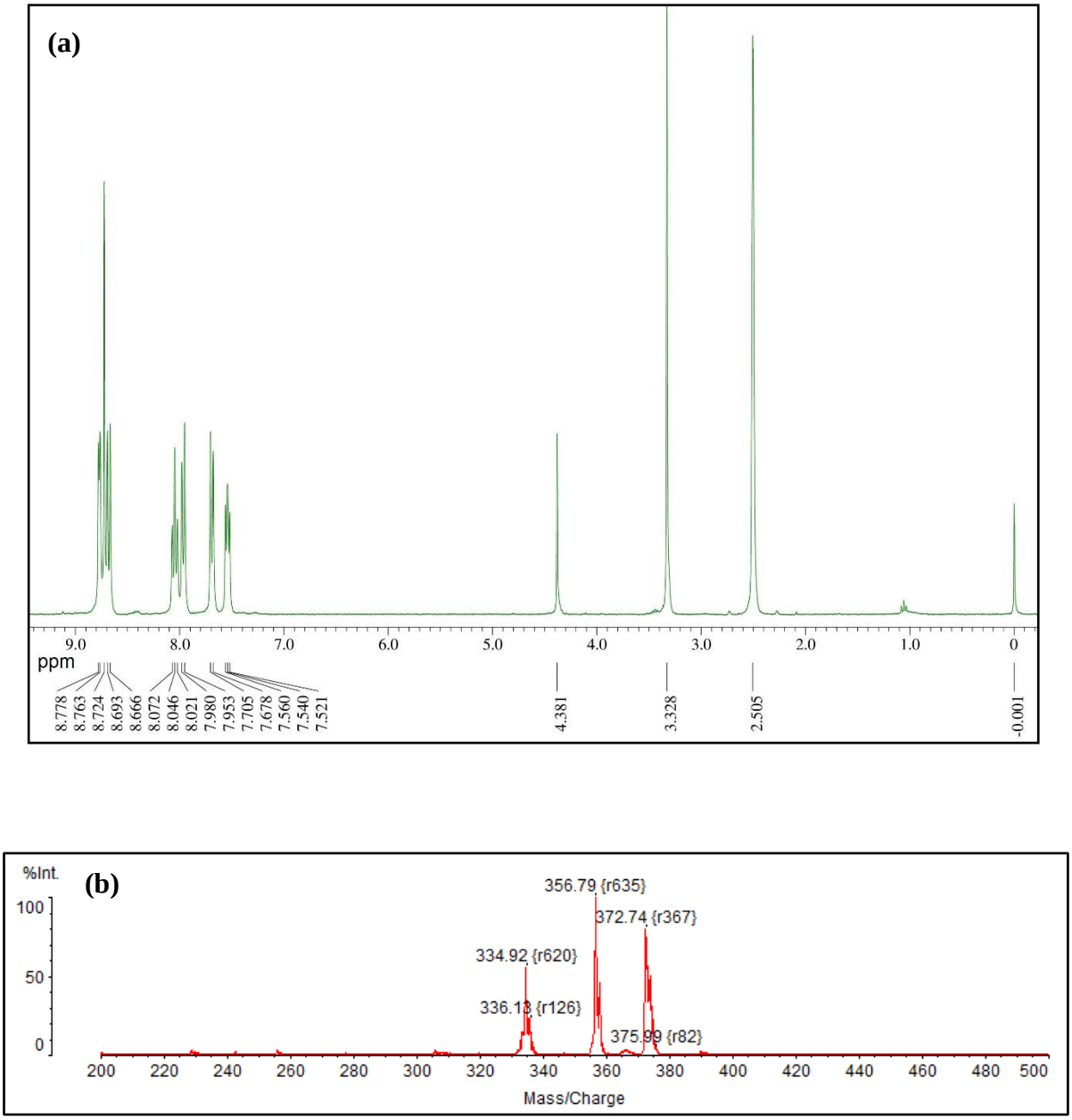

Fig. S1 (a) ^{1}H NMR spectrum of **L** using DMSO-d_6 as solvent, and (b) MALDI-TOF mass spectrum of **L**.

2. Characterizations of *cis*-PtL

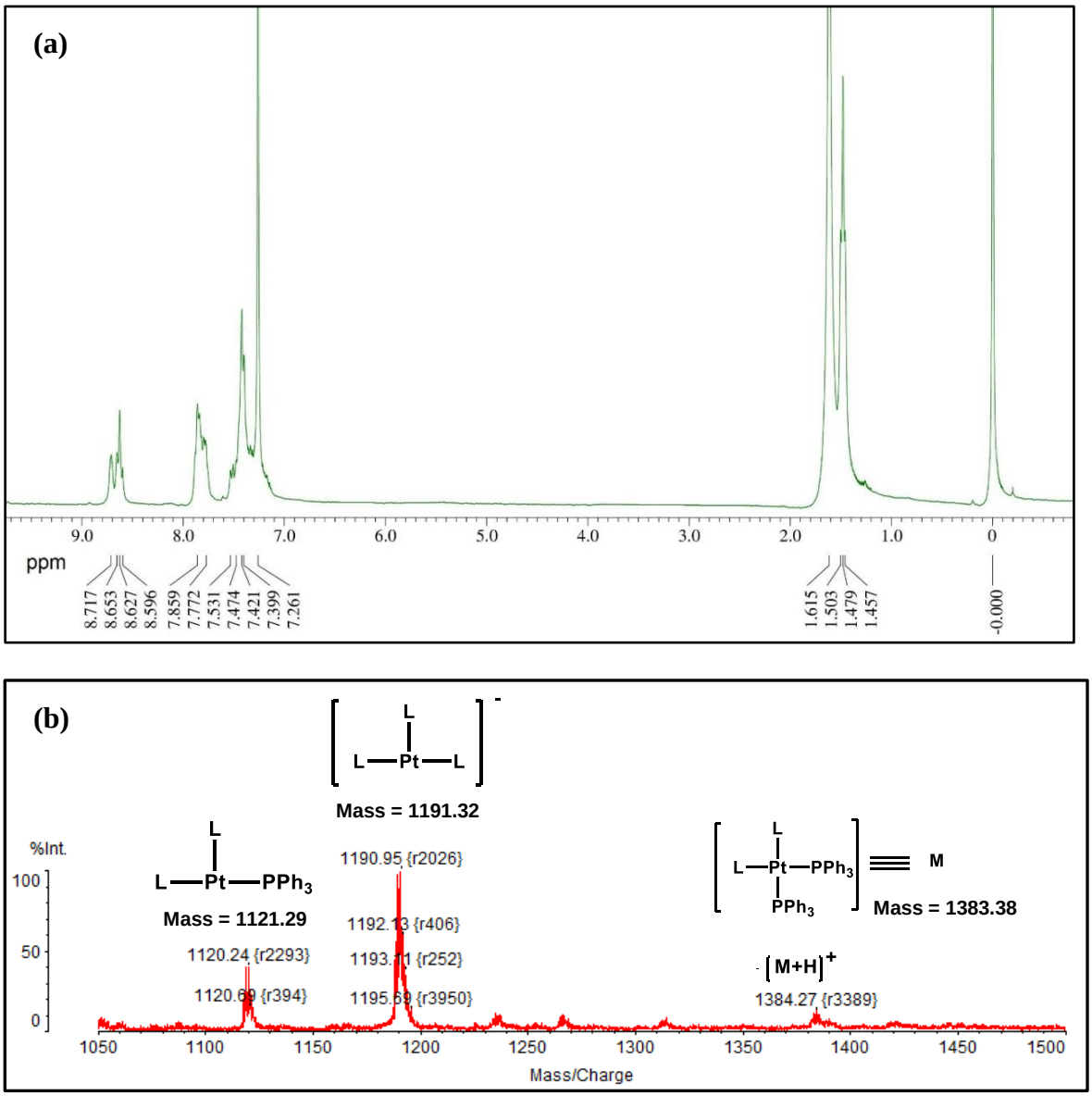

Fig. S2 (a) ^{1}H NMR spectrum of ***cis*-PtL** using $CDCl_3$ as solvent and (b) MALDI-TOF mass spectrum of ***cis*-PtL**.

3. Characterizations of *trans*-PtL

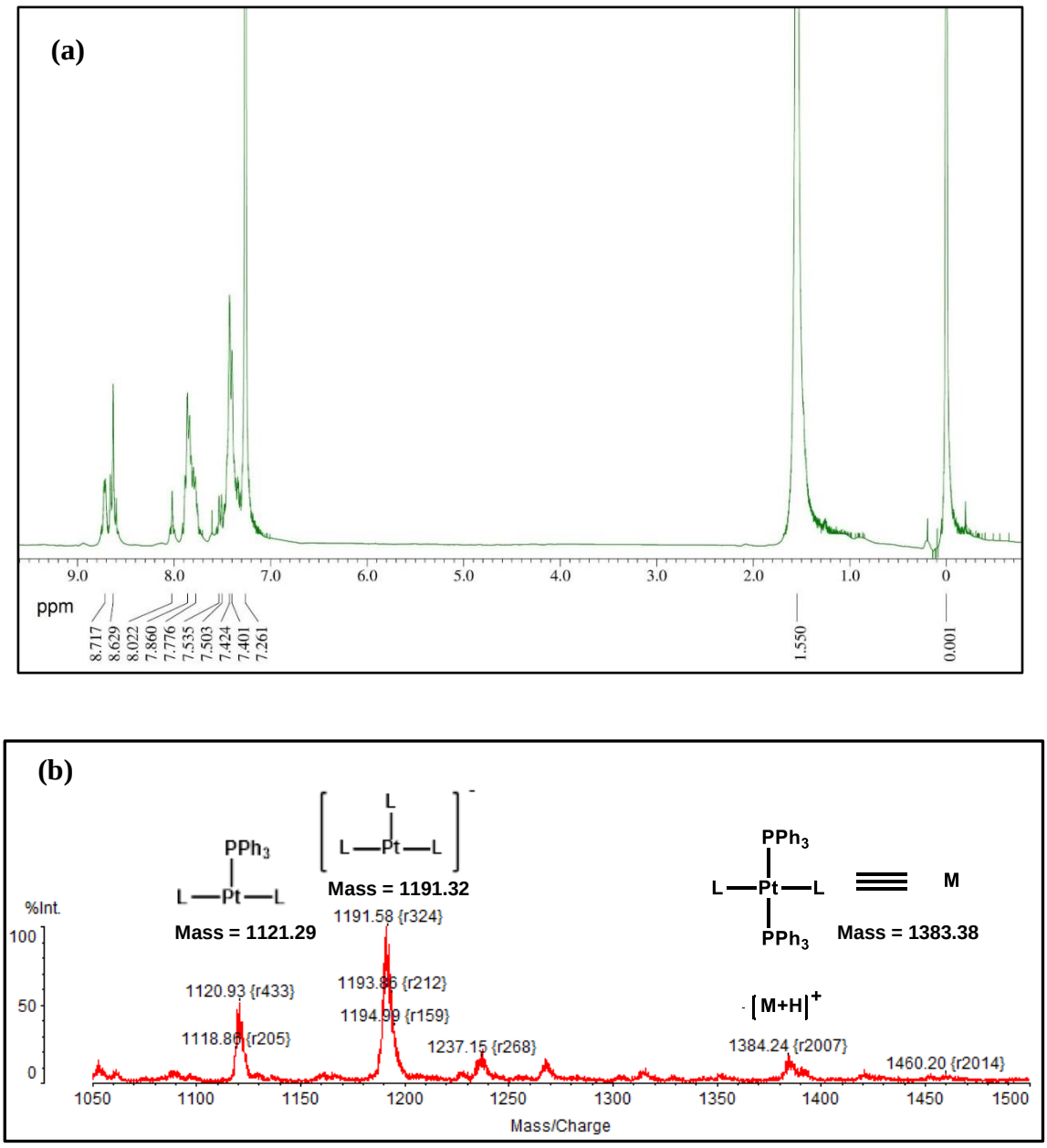

Fig. S3 (a) ^{1}H NMR spectrum of ***trans*-PtL** using $CDCl_3$ as solvent and (b) MALDI-TOF mass spectrum of ***trans*-PtL**.

4. ^{1}H NMR of *cis*-polyPtFe

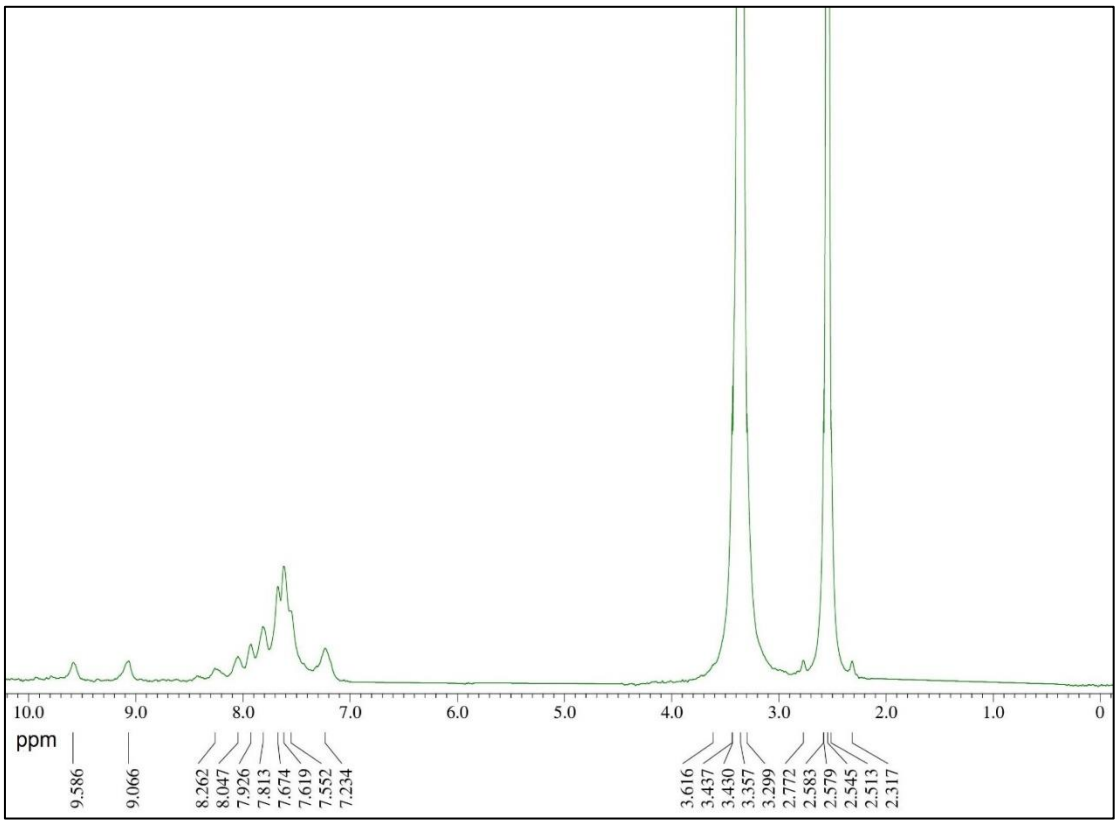

Fig. S4 ^{1}H NMR spectrum of ***cis*-polyPtFe** using DMSO-d_6 as solvent.

5. ^{1}H NMR of *trans*-polyPtFe

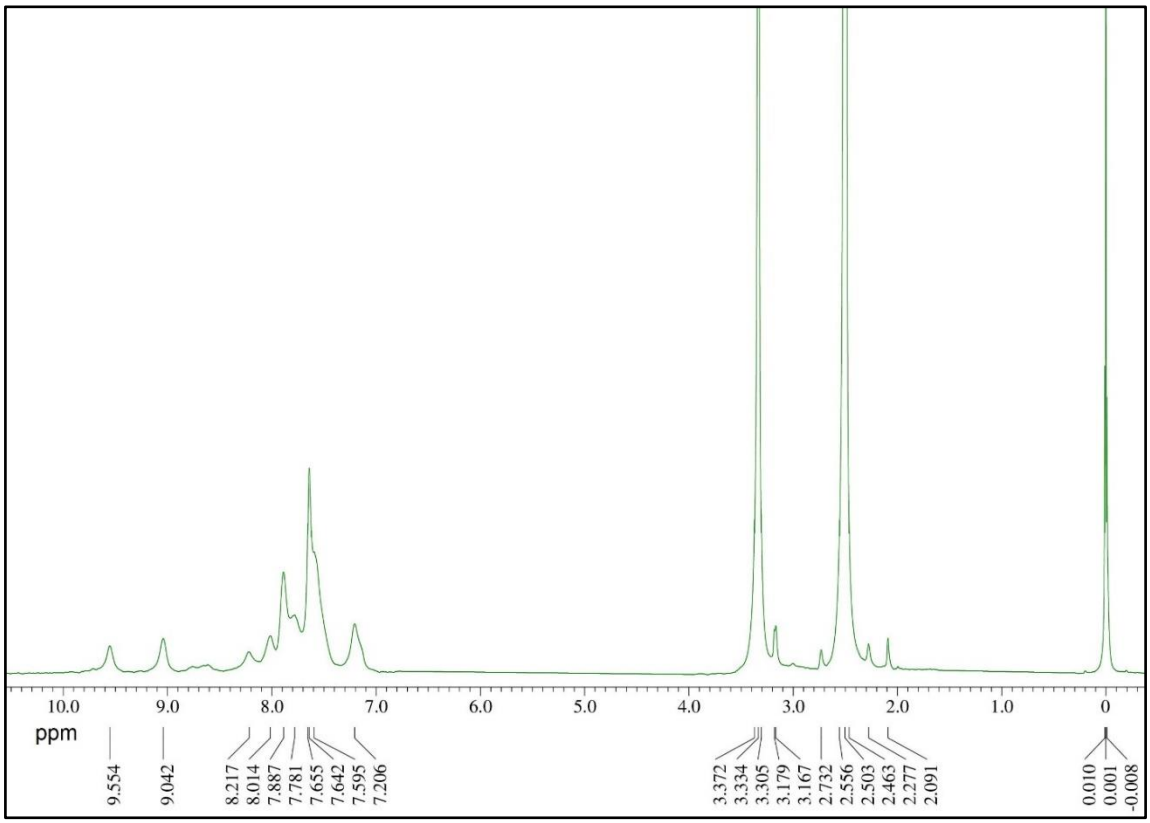

Fig. S5 ^{1}H NMR spectrum of ***trans*-polyPtFe** using DMSO-d_6 as solvent.

6. Comparison of ^{1}H NMR spectra of ligands and polymers

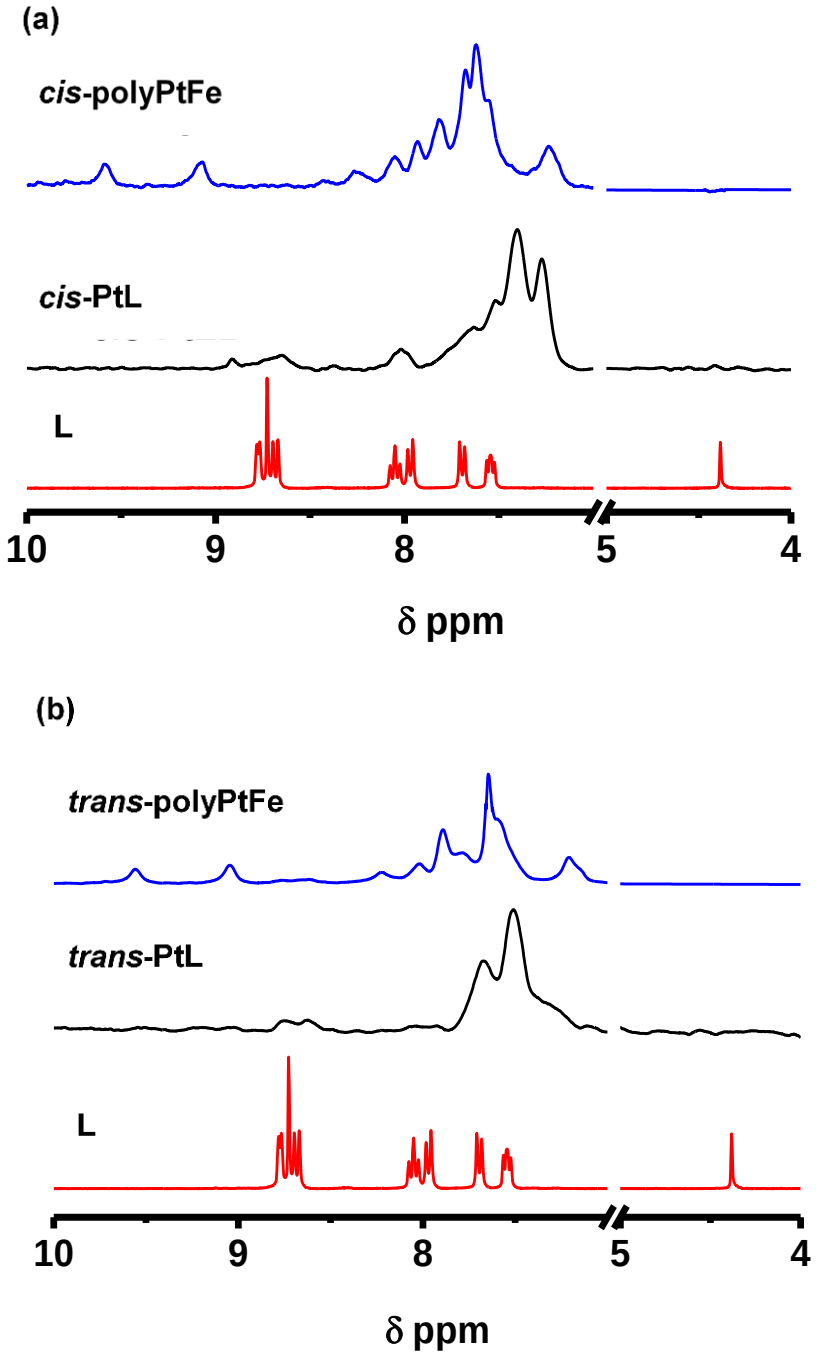

Fig. S6 Comparison of ^{1}H NMR spectrum of (a) **L**, ***cis*-PtL** and ***cis*-polyPtFe**; and (b) **L**, ***trans*-PtL** and ***trans*-polyPtFe.** All the spectra accrued in DMSO-d_6 solution at room temperature.

7. DOSY NMR study of *cis*-polyPtFe

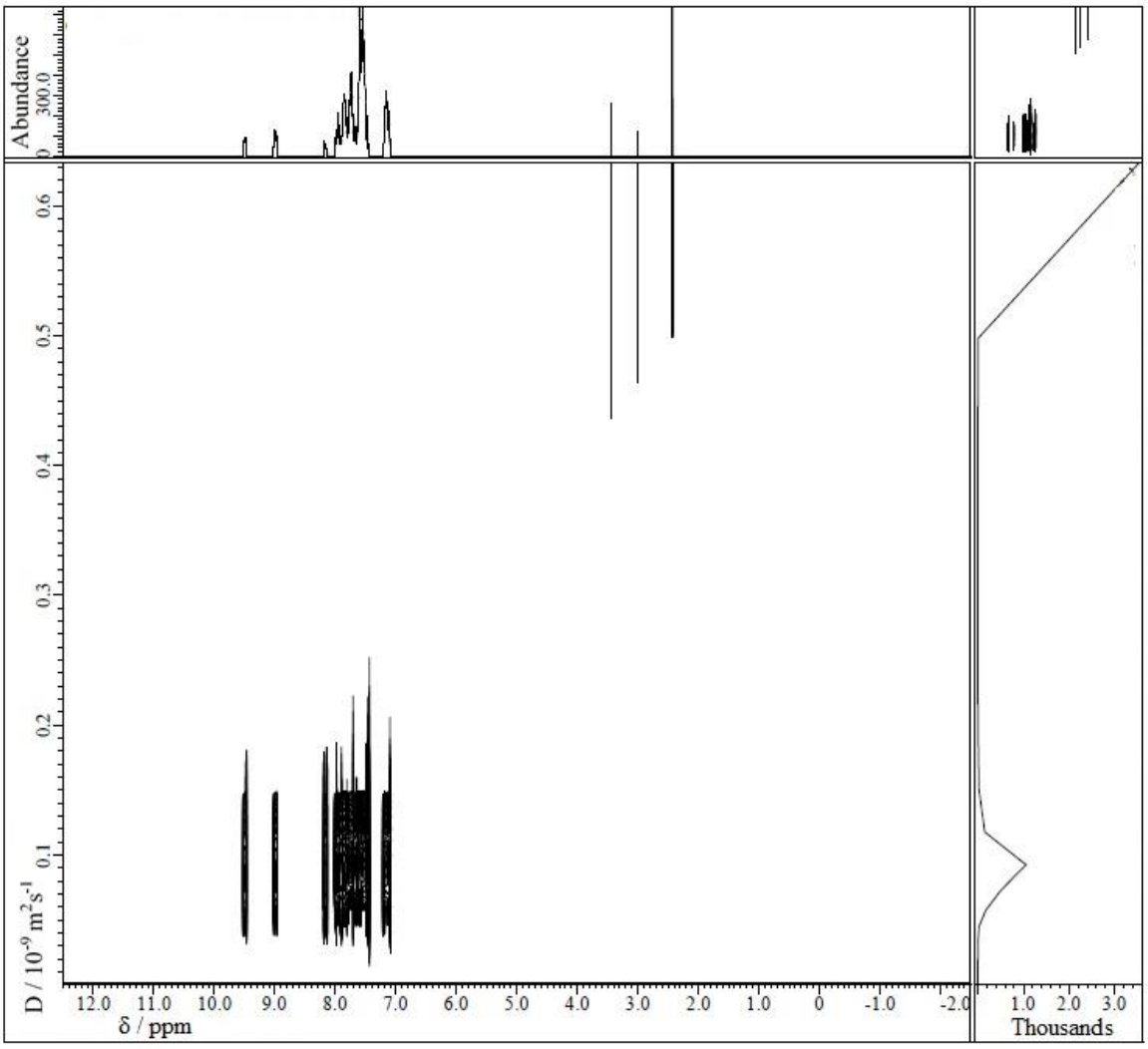

Fig. S7 DOSY NMR spectrum of ***cis*-polyPtFe** using DMSO-d_6 as solvent.

8. DOSY NMR study of *trans*-polyPtFe

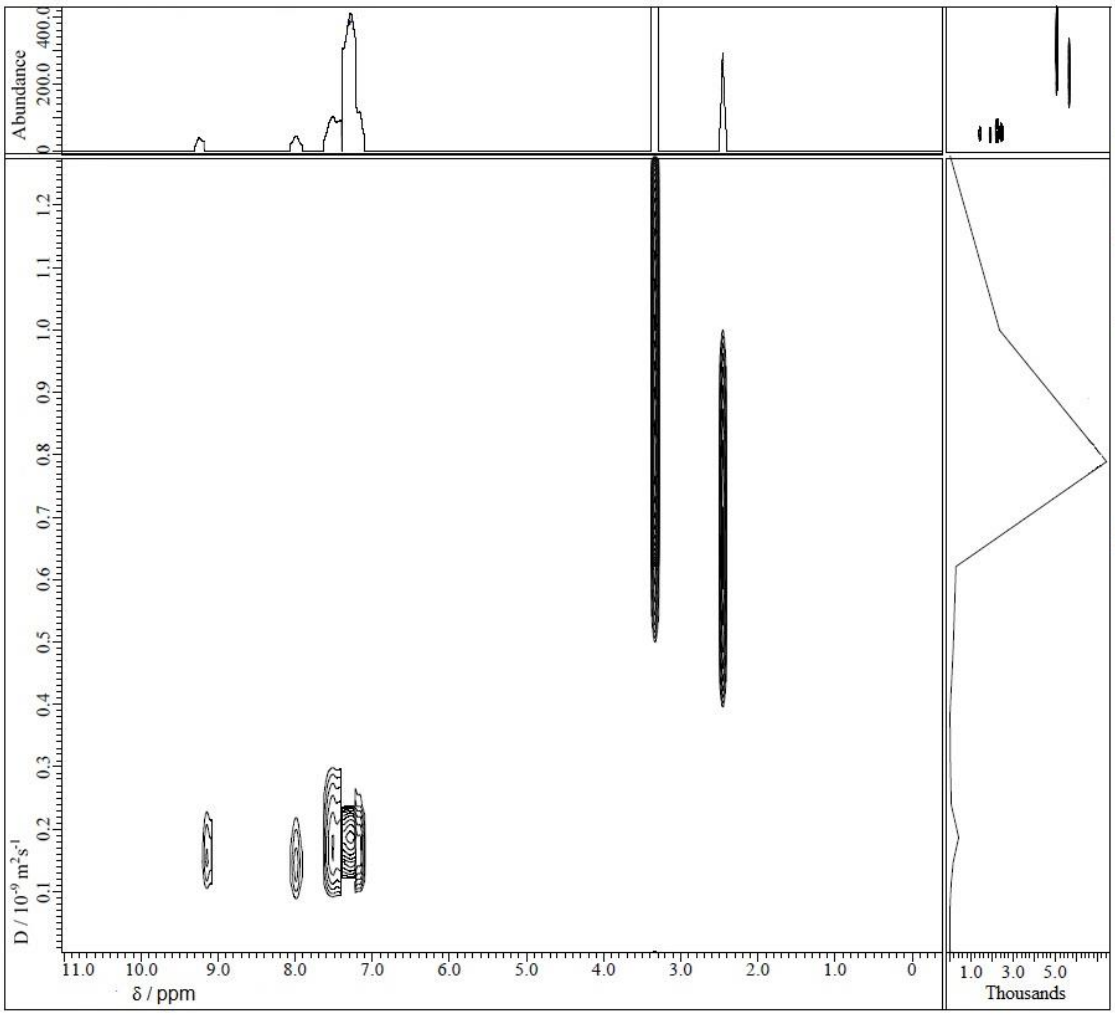

Fig. S8 DOSY NMR spectrum of ***trans*-polyPtFe** using DMSO-d_6 as solvent.

9. Schematic representation for polarization in polyPtFe

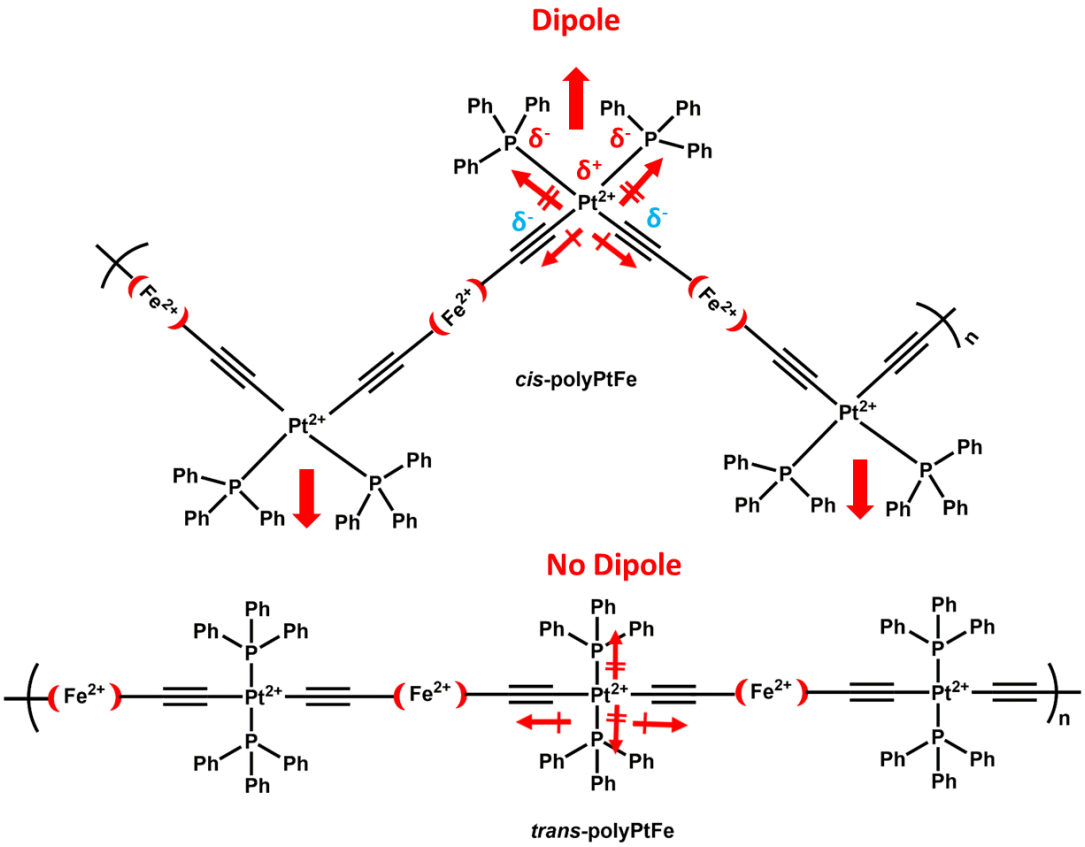

Fig. S9 Schematic representation of dipole in Pt^{2+} centers in **polyPtFe**.

10. Schematic representation of EC device preparation

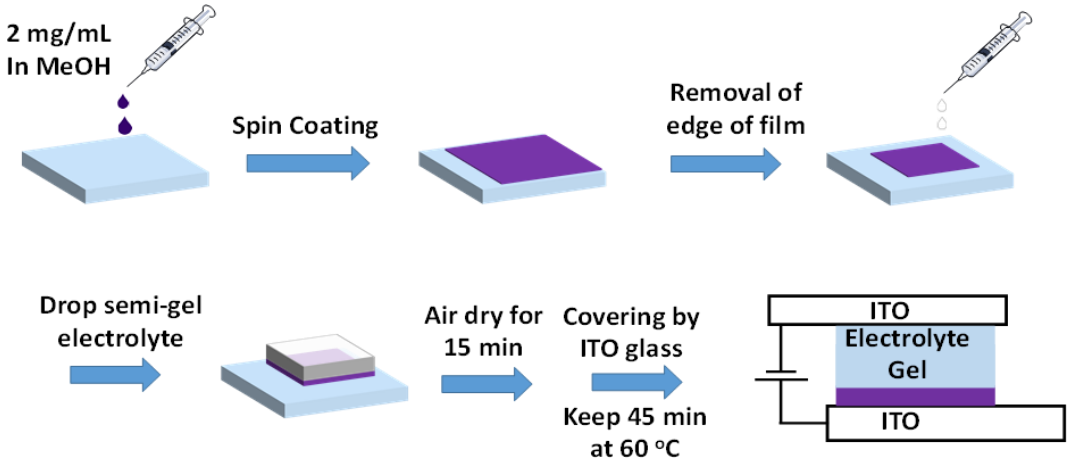

Fig. S10 Schematic representation of electrochromic device preparation with the polymers.

11. UV-Vis spectrum of L in solid film

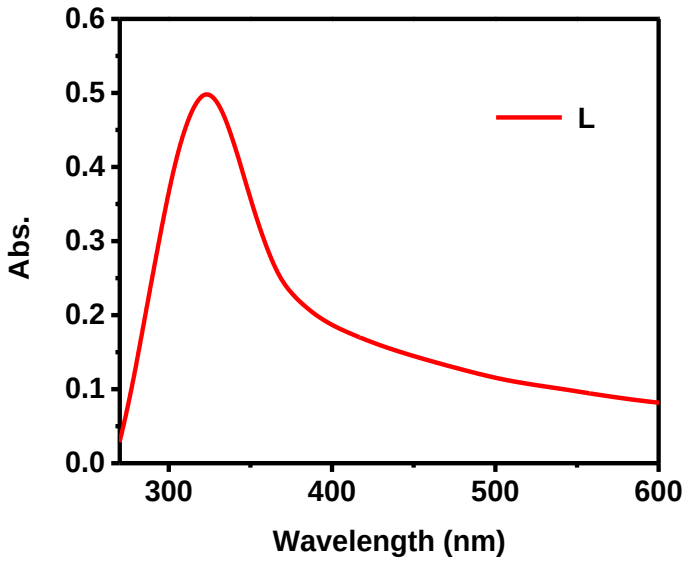

Fig. S11 UV-Vis spectra of ligand **L** in solid thin film.

12. Emission spectra of L

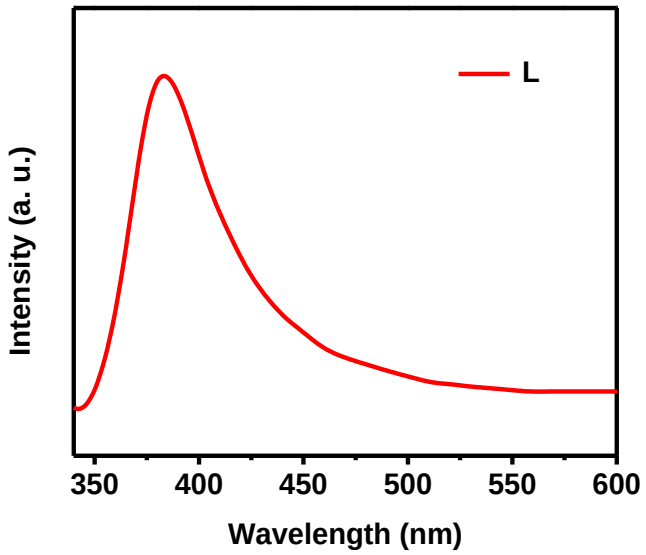

Fig. S12 Emission spectra of ligand **L** in solid thin film excited at 323 nm.

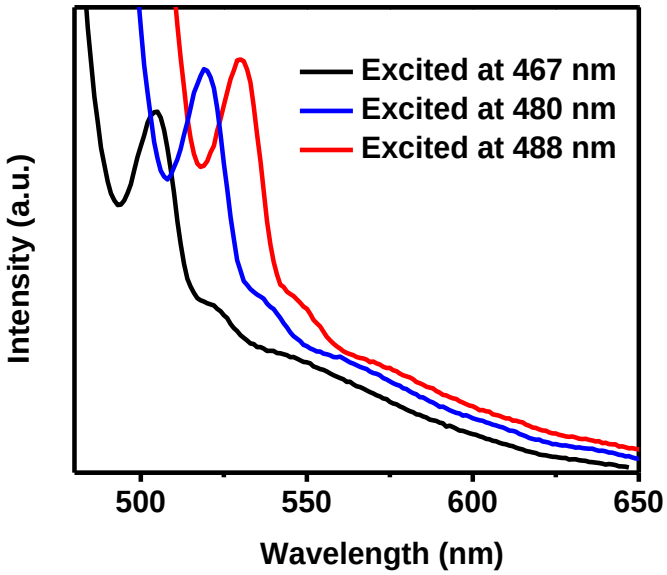

Fig. S13 Emission spectra of ligand **L** in solid thin film at different excitation wavelengths.

13. Raman spectroscopy of ligand and polymers

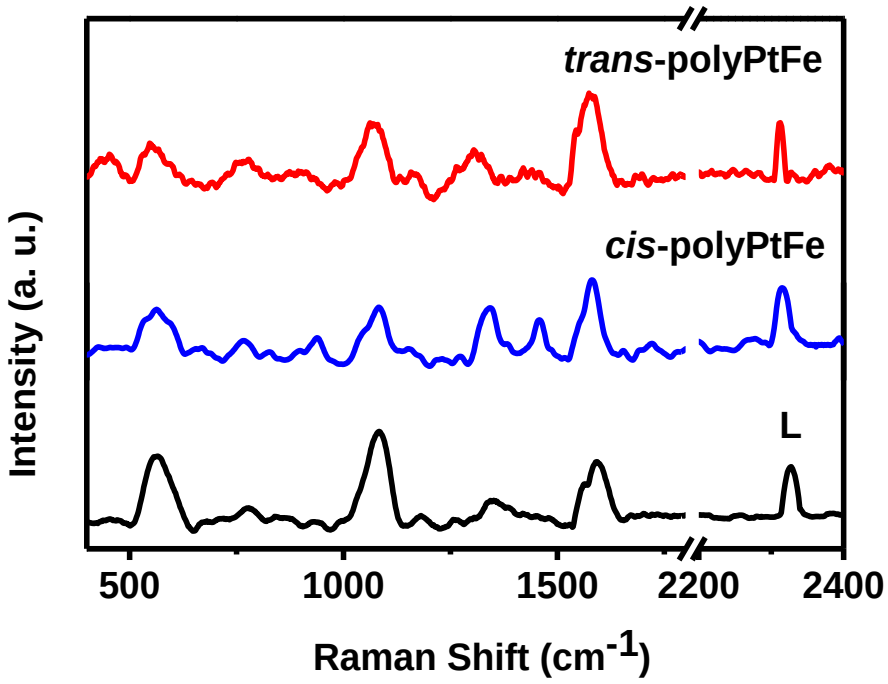

Fig. S14 (a) Raman spectra of **L**, ***cis*-polyPtFe** and ***trans*-polyPtFe** in solid film. λ_{max} = 532 nm, 60 mW, collection time = 3 s.