

Metallo-Supramolecular Polymers: Electrochromic and Supercapattery Device Application

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Metallo-supramolecular polymers (MSPs) are synthesized by the complexation of metal ions and multi-topic ligands. One- and two-dimensional structures of MSPs, the control of two metal species in MSP, and the electrochromic and supercapattery (= supercapacitor + battery) devices with MSPs are reported in this presentation.

Two-dimensional (2D) nanosheets of MSP (Figure 1a) was synthesized by the complexation of tris-phenanthroline ligand (**L1**) and Fe(II) salt at the interface of a water layer and an organic layer.¹ The polymer film showed red-to-colorless electrochromism. As to the one-dimensional (1D) linear MSP, a new stepwise synthetic method to introduce Fe(II) and Os(II) ions alternately was developed (Figure 1b).² The polymer showed multi-color electrochromism. The visible-to-near IR electrochromism was achieved in a zigzag structure of MSP with a redox-active ligand (**L3**) (Figure 1c).³ The EC devices with MSPs was revealed to have energy storage functions.⁴⁻⁶

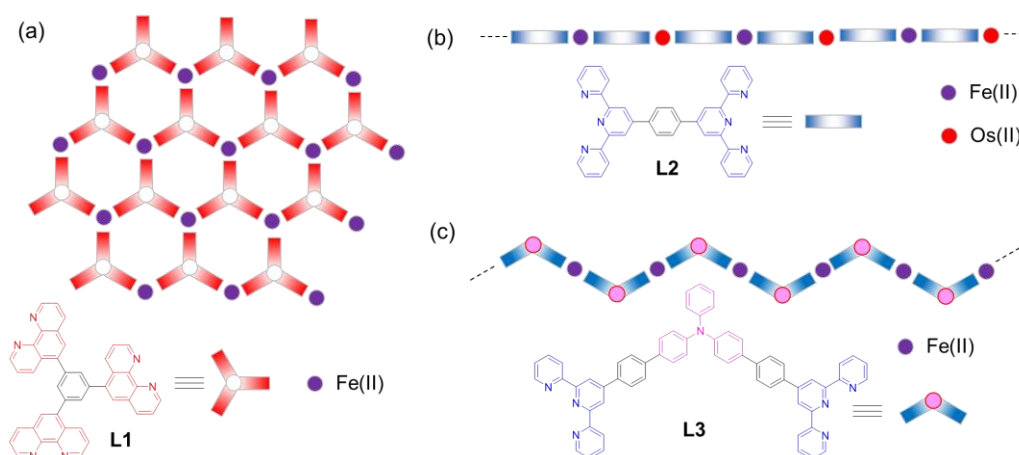


Figure 1. (a) 2D nanosheets of MSP, (b) the control of two metals in MSPs, (c) a zigzag structure of MSP.

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