Synthesis of Ru-Zn based metallosupramolecular polymer with electrochromic and electrofluorochromic properties

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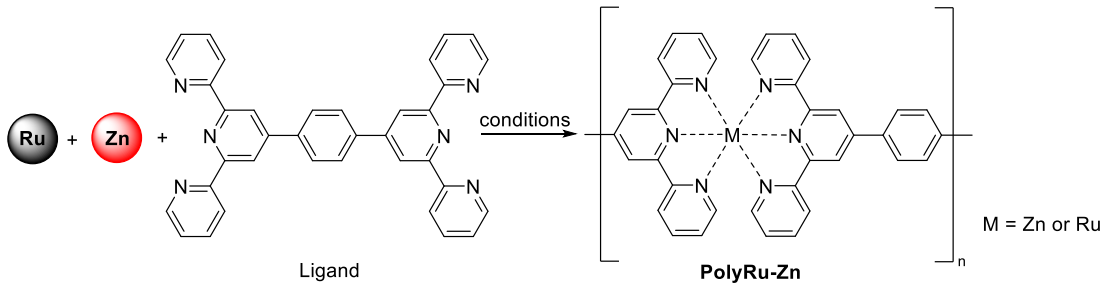
Electrofluorochromic materials are advanced optoelectronic materials with potential to revolutionize display technologies and enhance electronic devices through dynamic visual feedback. Recently, Mondal et al. have synthesized a Zn(II)-based MSP, which shows fluorescence in the neutral state with absorption at 325 nm, and it is quenched and color changed to green from yellow under oxidation.[1] This work demonstrates the potential of developing novel Zn(II)-based MSPs with EC/EFC switching properties.



PolyRu-Zn2 Ligand : $Ru(DMSO)_4Cl_2$: $Zn(OAc)_2$ = 2:1:1 Ethylene glycol, reflux, 24 h

PolyRu-Zn3 Ligand : $Ru(DMSO)_4Cl_2$: $Zn(OAc)_2$ = 2:1:1 AcOH, reflux, 24 h

In this research, we synthesized a Ru(II)-Zn(II)-heterometallic supramolecular polymers by one-pot synthesis using the symmetric ligand under different conditions. Significantly, a peak appeared in the NIR region during oxidation. The polyRu-Zn2 displayed blue fluorescence when excited at 320 nm under oxidation and returned to its original dark color upon reduction. A comparative study with other polymers showcased unique optoelectronic properties, emphasizing the material's promise for novel applications.

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