

## Synthesis and Photophysical Properties of a Eu(III) Coordination Polymer with Asymmetric Linker

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Lanthanide complexes exhibit narrow emission bands based on the 4f orbital. We have reported that lanthanide coordination polymers linked with bridging ligands show characteristic thermo-stability and thermo-sensing luminescence.<sup>1,2</sup> In our previous studies, symmetric bridging ligands were attached in lanthanide coordination polymer.<sup>1-4</sup> Asymmetric linker ligand in Eu(III) coordination polymer is expected to promote the electronic unbalanced in Eu(III) luminescent centers. Here, we report on synthesis, steric structure and photophysical properties of a novel Eu(III) coordination polymer with asymmetric linker ligand (asym-DPPEO) (Fig. 1).

$[\text{Eu}(\text{hfa})_3(\text{asym-DPPEO})]_n$  was synthesized by the chelation of  $\text{Eu}(\text{hfa})_3(\text{H}_2\text{O})_2$  (hfa:hexafluoroacetylacetonate) with asym-DPPEO in methanol. The emission quantum yield of 4f-4f transition ( $\Phi_{\text{Ln}}$ ) and photosensitized energy transfer efficiency ( $\eta_{\text{sens}}$ ) at room temperature were estimated to be 60 % and 3.2 %, respectively. The temperature-depended luminescence was also analyzed by the emission lifetime measurements and TD-DFT calculations. In this study, thermosensitive luminescent properties of asymmetric Eu(III) coordination polymer are demonstrated.

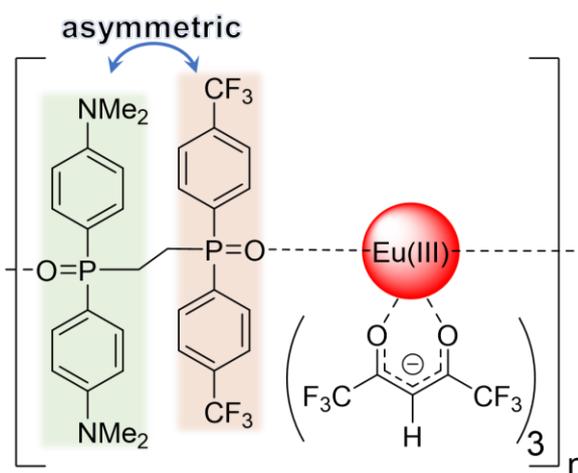


Fig. 1 Eu(III) coordination polymer with asymmetric linker ligand

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