

Photochromic dinuclear europium (III) complex

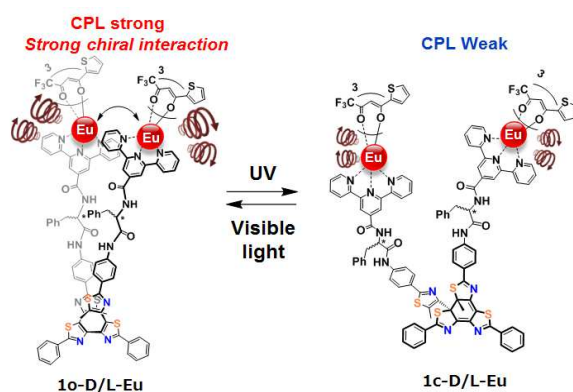
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Photochromic tetra-thiazole is a new photochromic scaffold which induces not only chirality in a helix sense, but also large conformational change with a photochromic reaction. We reported the switching of circularly polarized luminescence (CPL) of pyrene excimer through the modulation of chiral arrangement of pyrene chromophores via photo-irradiation¹. However, the chiral organic fluorophores hardly afford CPL dissymmetric value over 0.01.

Here we report a new CPL photo-switch with a photochromic tetra-thiazole having terpyridine ligand capable of tethering luminescent tris (β -diketonate) europium (III) complex (Scheme.1). The strong CPL signal with high dissymmetric value ($g_{lum} > 0.15$) was observed at magnetic dipole transition (Fig.2). After UV irradiation, the CPL signal of complex **1o** was dramatically changed owing to the formation of closed-ring isomer. This result might be attributed to the change of coordination environment around Eu (III) ion accompanied by photochromic reaction of tetra-arylene.



Scheme.1 Photo-switching of chiral dinuclear europium(III) complex with tetrathiazole

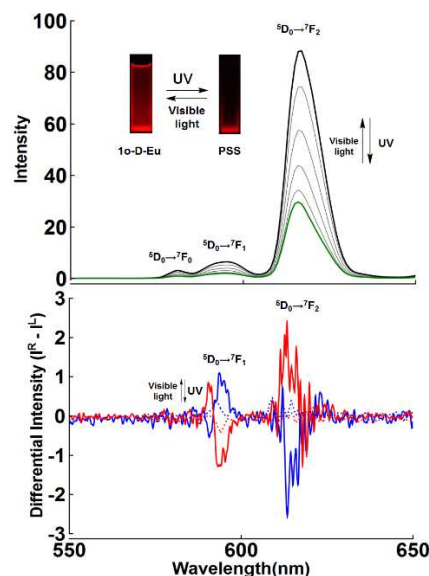


Fig.1 Photo-luminescence (Upper) and CPL (bottom) spectral change upon UV irradiation

References:

- [1] M Y. Hashimoto, T. Nakashima, D. Shimizu, T. Kawai, *Chem. Commun.* 2016, 52, 5171-5174.