Synthesis, metal binding and spectral properties of novel bis-1,3-diketone calix[4]arenes

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Electronic Supplementary Information

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1. UV-Vis absorption spectra of Ln-L

![UV-Vis absorption spectra of ligands 3, 4 and 5 in DMF in alkalized DMF](image)

**Figure S1.** UV-Vis absorption spectra of ligands 3, 4 and 5 ($C_L=0.1$ mM) in DMF in alkalized DMF ($C_{TEA}=0.8$ mM) after 1 (a) and 4 (b) day storage of solution.

2. Excitation spectra of Tb-L and Eu-L complexes

![Excitation spectra of alkalized DMF solutions of ligands 3-6 with Tb$^{3+}$ and Eu$^{3+}$](image)

**Figure S2.** Excitation spectra of alkalized DMF solutions of ligands 3-6 with Tb$^{3+}$ (a) and Eu$^{3+}$ (b). $C_L = C_{Ln^{3+}} = 0.1$ mM, $C_{TEA} = 0.4$ mM. $\lambda_{em} = 545$ nm (a) and 612 nm (b).
3. Luminescence decay curves of Tb-L complexes

Figure S3. Luminescence decay curves of alkalized DMF solutions of Tb$^{3+}$ with 3 (a) ($\lambda_{\text{ex}} = 320$ nm, $\lambda_{\text{em}} = 545$ nm, $R^2=0.992$) and 6 (b) ($\lambda_{\text{ex}} = 325$ nm, $\lambda_{\text{em}} = 545$ nm, $R^2=0.989$). $C_L = C_{\text{Tb(III)}} = 0.1$ mM, $C_{\text{TEA}} = 0.4$ mM.

4. Luminescence spectra of Gd-L complexes

Figure S4. Luminescence spectra of alkalized DMF solutions of ligands 3 (a), 4 (b), 5 (c) with Gd$^{3+}$ at different delay times: 1 (1), 10 (2) and 20 (3) μs. $C_L = C_{\text{Ln}^{3+}} = 0.1$ mM, $C_{\text{TEA}} = 0.4$ mM.