Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting Information

Binding of pyrazine-functionalized calix[4]arene ligands with lanthanides in an ionic liquid: Thermodynamics and coordination modes

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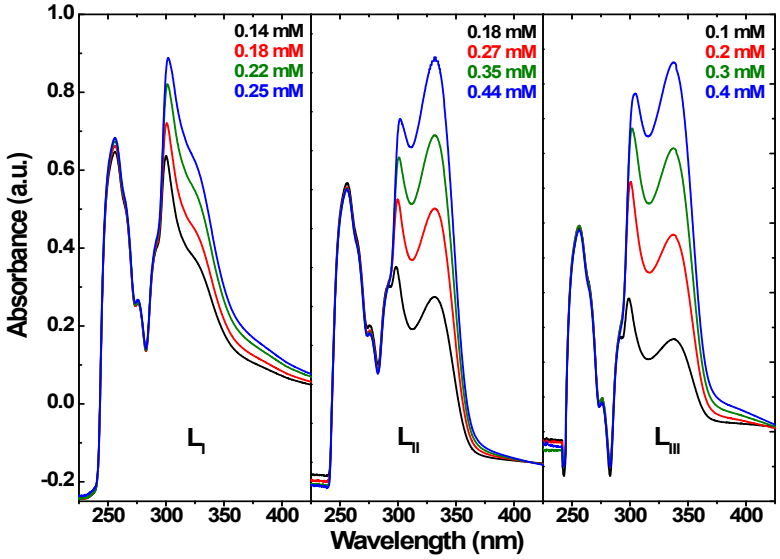

Figure S1. Absorption spectra of ligands $\mathbf{L_{I\text{-}III}}$ with increasing ligand concentration. The absorbance band between 285 – 400 nm followed Beer's Law, whereas the absorption band at 256 nm was not affected by the ligand concentration.

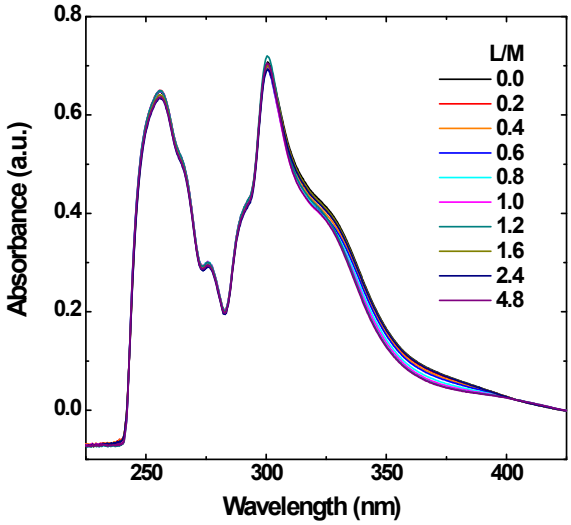

Figure S2. Spectrophotometric titration of $\mathbf{L_I}$ with $Eu(Tf_2N)_3$. Cuvette solution: 0.18 mmol/L ligand (0.8 mL); Titrant: 3.8 mmol/L $Eu(Tf_2N)_3$ added in the range of 0.01 – 1.0 mL. L/M ratio refers to C_L/C_{Eu} in solution.

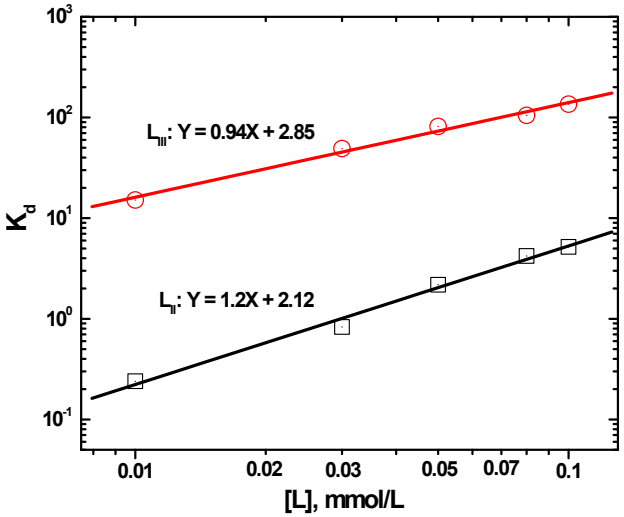

Figure S3. Variation of distribution coefficient (K_d) as a function of ligand concentration. Organic phase: $\mathbf{L_{II}}$ or $\mathbf{L_{III}}$ in $BumimTf_2N$; Aqueous phase: 1 mol/L HNO_3; Temperature: 25 °C.

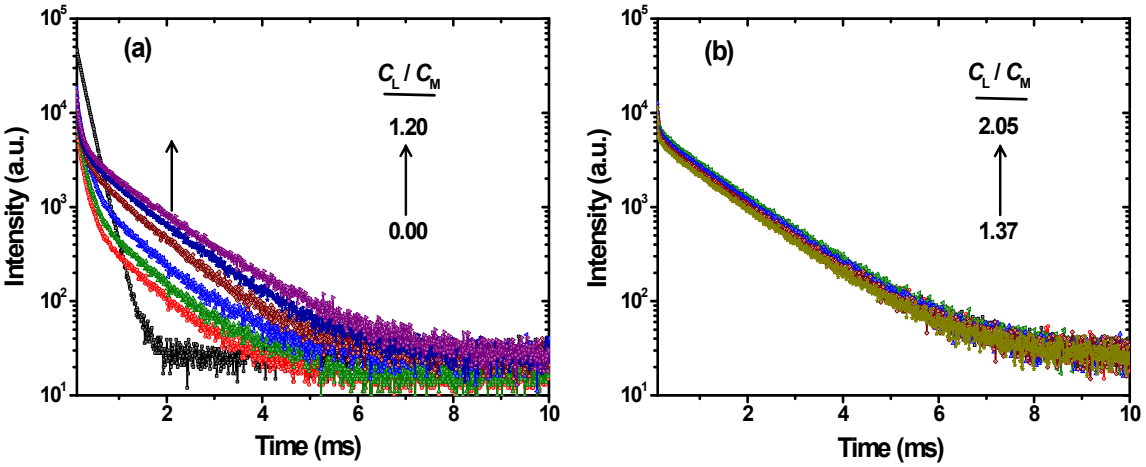

Figure S4. Luminescence decay of Eu(III) at varying C_L/C_{Eu} ratios. Excitation wavelength: (395 ± 5) nm; Emission wavelength: (612 ± 5) nm. Cuvette solution: 15 mmol/L $Eu(Tf_2N)_3$ (1.5 mL); Titrant: 15.3 mmol/L $\mathbf{L_{II}}$.