Supporting Information

A Comparison of Sensitised Ln(III) Emission with Pyradine- and Pyrazine-2,6-Dicarboxylates

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**Figure S1.** Comparison of unit cell packing diagrams for the Cs₃[Eu(PYZ)₃].7H₂O and Cs₃[Eu(DPA)₃].9H₂O complexes (a) as viewed down the crystallographic a-axis (b) as viewed down the crystallographic b-axis and (c) as viewed down the crystallographic c-axis. The Eu(III) and Cs(I) metal centers are represented as orange and yellow spheres respectively. Remaining non-metal atoms are omitted for clarity.
Figure S2. Comparison of the normalized luminescence spectra for ca. 50 µM solutions of [Eu(PYZ)$_3$]$^{3-}$ (top, black) and [Eu(DPA)$_3$]$^{3-}$ (bottom, red) in 0.1 M HEPES buffer at pH 7.4. The [Eu(PYZ)$_3$]$^{3-}$ spectrum is offset for clarity.
Using the Equation

\[
\frac{\Phi_x}{\Phi_r} = \left[ \frac{A_x(\lambda_x)}{A_r(\lambda_r)} \right] \left[ \frac{I_x(\lambda_x)}{I_r(\lambda_r)} \right] \left[ \frac{\eta_x^2}{\eta_r^2} \right] \left[ \frac{D_x}{D_r} \right],
\]

\(\Phi_r = 0.54,\)
\(\eta_x (\text{H}_2\text{O}) = 1.33,\)
\(\eta_x (\text{MeOH}) = 1.329,\)
and \(I(\lambda_x) = I(\lambda_r)\)

\(\Rightarrow\) slopes of standard = \(D_r / A_r(\lambda_r)\)

\(\Rightarrow\) slope of unknown(s) = \(D_x / A_x(\lambda_x)\)

\(\Rightarrow\) slope of unknown / slope of standard = \([D_x / A_x(\lambda_x)] * [A_r(\lambda_r) / D_r]\)

\[\Phi_{\text{Eu(DPA)}3} = \frac{(6.174 \times 10^7 / 3.656 \times 10^8) * (1.33^2 / 1.329^2) * 0.54}{0.913 (\sim 9.1\%)}\]

\[\Phi_{\text{Eu(PYZ)}3} = \frac{(2.928 \times 10^7 / 3.656 \times 10^8) * (1.33^2 / 1.329^2) * 0.54}{0.0434 (\sim 4.3\%)}\]

**Figure S3.** Quantum yield determinations for ca. 2-6 µM solutions of [Eu(PYZ)]\(^3\) (black triangles) and [Eu(DPA)]\(^3\) (red squares) in 0.1 M HEPES buffer at pH 7.4 vs Cresol Violet Perchlorate in MeOH (blue circles) (\(\Phi_{\text{ref}} = 0.54\)) as a quantum yield standard.