Electronic Supplementary Material (ESI) for Dalton Transactions

Supporting Information

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

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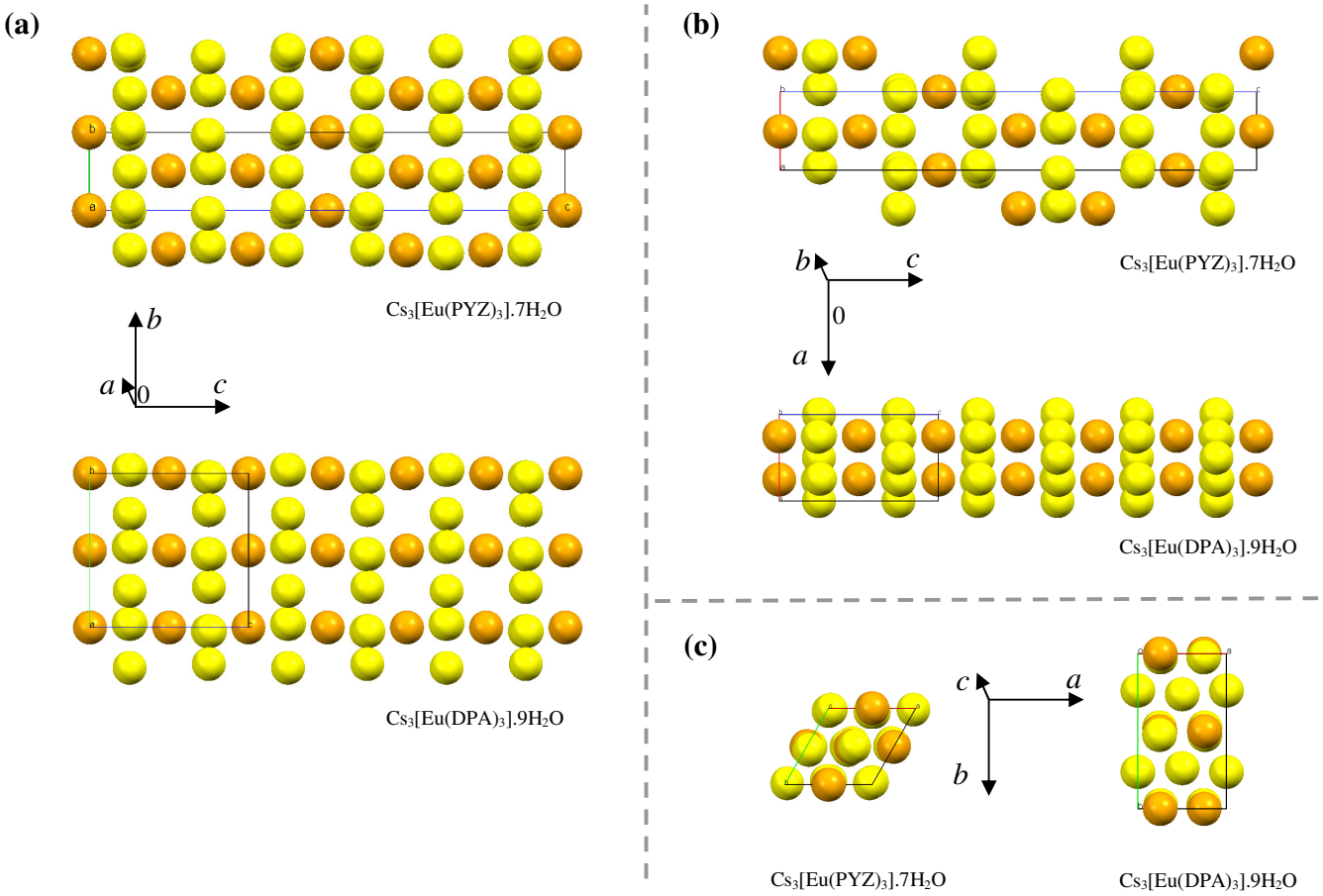


Figure S1. Comparison of unit cell packing diagrams for the $Cs_3[Eu(PYZ)_3].7H_2O$ and $Cs_3[Eu(DPA)_3].9H_2O$ complexes (a) as viewed down the crystallographic *a*-axis (b) as viewed down the crystallographic *b*-axis and (c) as viewed down the crystallographic *c*-axis The Eu(III) and Cs(I) metal centers are represented as orange and yellow spheres respectively. Remaining non-metal atoms are omitted for clarity.

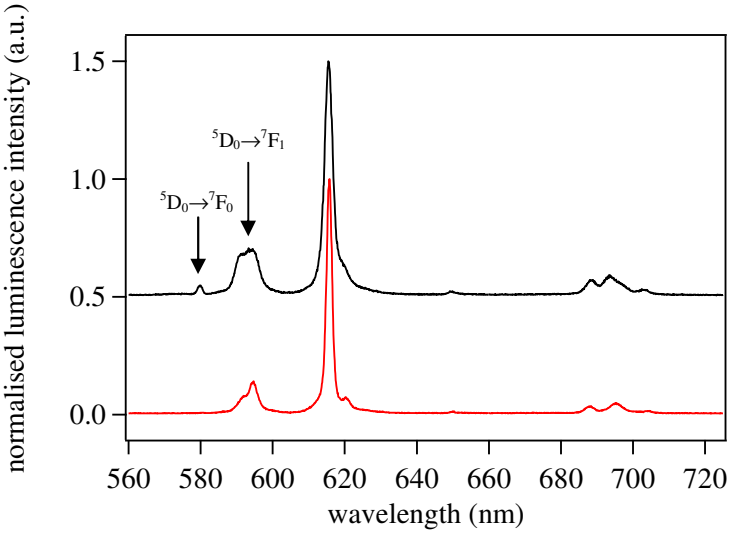
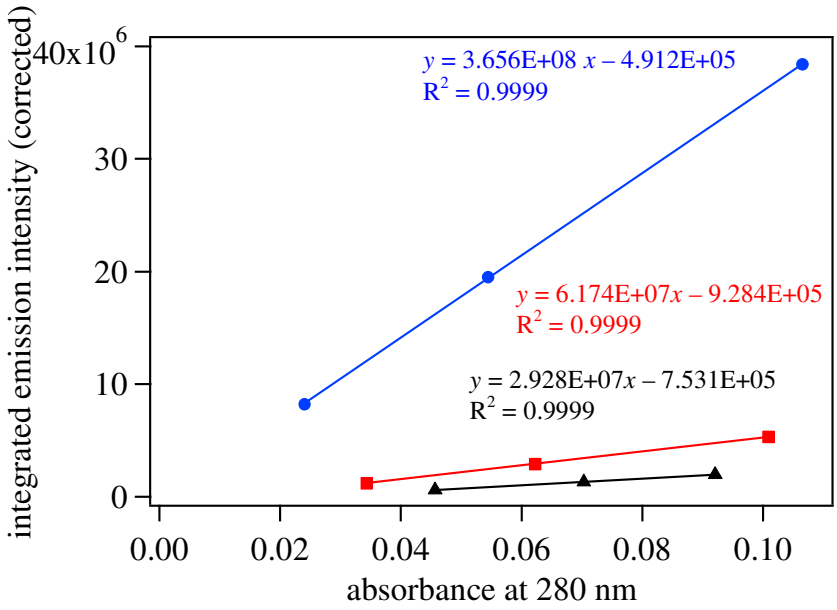


Figure S2. Comparison of the normalized luminescence spectra for *ca*. 50 μM solutions of $[Eu(PYZ)_3]^{3-}$ (top, black) and $[Eu(DPA)_3]^{3-}$ (bottom, red) in 0.1 M HEPES buffer at pH 7.4. The $[Eu(PYZ)_3]^{3-}$ spectrum is offset for clarity.



Using the Equation $\frac{\Phi_x}{\Phi_r} = \left[\frac{A_r(\lambda_r)}{A_x(\lambda_x)}\right]\left[\frac{I(\lambda_r)}{I(\lambda_x)}\right]\left[\frac{\eta_x^2}{\eta_r^2}\right]\left[\frac{D_x}{D_r}\right]$,

$\Phi_r = 0.54$,

η_x (H_2O) = 1.33,

η_r (MeOH) = 1.329,

and $I(\lambda_r) = I(\lambda_x)$

$\Rightarrow$ 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 = $[D_x / A_x(\lambda_x)]$ * $[A_r(\lambda_r) / D_r]$

$\Phi_{Eu(DPA)]3}$ = (6.174e7 / 3.656e8) * (1.33^2 /1.329^2) * 0.54

= 0.0913 (~ 9.1%)

$\Phi_{[Eu(PYZ)]3}$ = (2.928e7 / 3.656e8) * (1.33^2 /1.329^2) * 0.54

= 0.0434 (~ 4.3%)

Figure S3. Quantum yield determinations for *ca*. 2-6 μM solutions of $[Eu(PYZ)_3]^{3-}$ (black triangles) and $[Eu(DPA)_3]^{3-}$ (red squares) in 0.1 M HEPES buffer at pH 7.4 *vs* Cresol Violet Perchlorate in MeOH (blue circles) (Φ_{ref} = 0.54) as a quantum yield standard.