Luminescent self-assembly formation on a gold surface observed by reversible 'off-on' switching of Eu(III) emission

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ESI

Figure 1. Infrared spectrum of 1.Eu (blue line) and 1.Eu.2 (red line) immobilised on a gold sample.



Figure 2. A) Sample of unfunctionalised gold evaporated onto mica. B) Sample of gold evaporated onto mica functionalised with Eu.1.2 [1 x 10-4 M]. Both were imaged using AFM in contact mode, in water. Please note that the two images are not on the same scale.



Figure 3. A) Plot of wavelength *vs* intensity of the emission of complex 1.Eu.2. The spectra are taken with $\lambda_{\text{excitation}} = 250, 275, 281, 300$, and 365 nm. The arrows show the bands that correspond to $2\lambda_{\text{exc}}$.



Figure 4. The decay of the excited state of the Eu(III) arising from 1.Eu.2 upon excitation at 280 nm, on a gold substrate, within the first 4 ms.



Figure 5. A series of overlaid luminescence spectra of one sample of **1.Eu.2** on gold. This spectrum shows one sample, a) 1 hour after removing from a solution of **1.Eu.2**, rinsing with EtOH and drying under N2, (blue spectrum); b) 24 hours after this (green spectrum); c) after immersion in EtOH for 24 hrs, followed by drying with N2 (red spectrum).

