



Figure. STM images and spectroscopic maps of Eu based molecular complexes on Au(111). (a) $[\text{Eu}(\text{pcam})_3]^{3+}$ (Europium(III) tris(2,6-pyridinedicarboxamide)) with triflate (CF_3SO_3^-) counter ion attached, (b) without the counter ion, (c) 2-D self-assembled layer formed by Ullmann coupled $\text{Eu}(\text{pcam})_3$, (d) coupled $\text{Eu}(\text{pcam})_3$ and (e) spectroscopic map of a self-assembled structure at -200mV.