

**Fig. S1** (Top) The cyclic voltammograms of 3.2  $\mu$ mol dm<sup>-3</sup> BFcPd<sub>n</sub> in 0.1 mol dm<sup>-3</sup> Bu<sub>4</sub>NClO<sub>4</sub>– CH<sub>2</sub>Cl<sub>2</sub> at 0.1 V s<sup>-1</sup> between –0.3 V and 0.9 V vs. Ag/Ag<sup>+</sup> with 25 cyclic potential scans at an ITO electrode. (Bottom) The cyclic voltammograms of 3.2  $\mu$ mol dm<sup>-3</sup> BFcAu<sub>n</sub> in 0.1 mol dm<sup>-3</sup> Bu<sub>4</sub>NClO<sub>4</sub>– CH<sub>2</sub>Cl<sub>2</sub> at 0.1 V s<sup>-1</sup> between –0.3 V and 0.9 V vs. Ag/Ag<sup>+</sup> with 25 cyclic potential scans at an ITO electrode where BFcPd<sub>n</sub>s were pre-electrodeposited by the procedure described in the text.