

Spectroelectrochemical Studies of Cation Percolation on Functionalized Nanocrystalline TiO₂ Films: A Comparison of Two Different Ruthenium Complexes

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1. Dye cation lifetime measurement

Fig.S1 shows the life time measurements for HW456 dye. The potential step is from -0.4 V to +0.45 V vs Fc/Fc⁺.

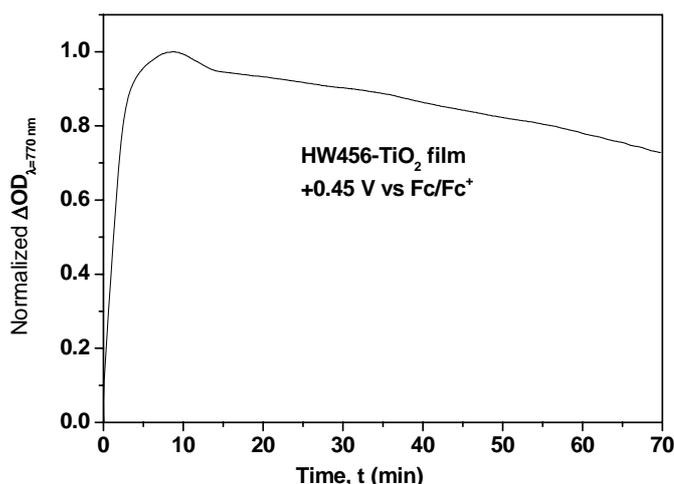


Figure S1 Lifetime measurements for HW456 on nanocrystalline TiO₂ film in non-aqueous solution (0.1 M TBAP in acetonitrile).

2. CV and CVA of N621 dye free solution

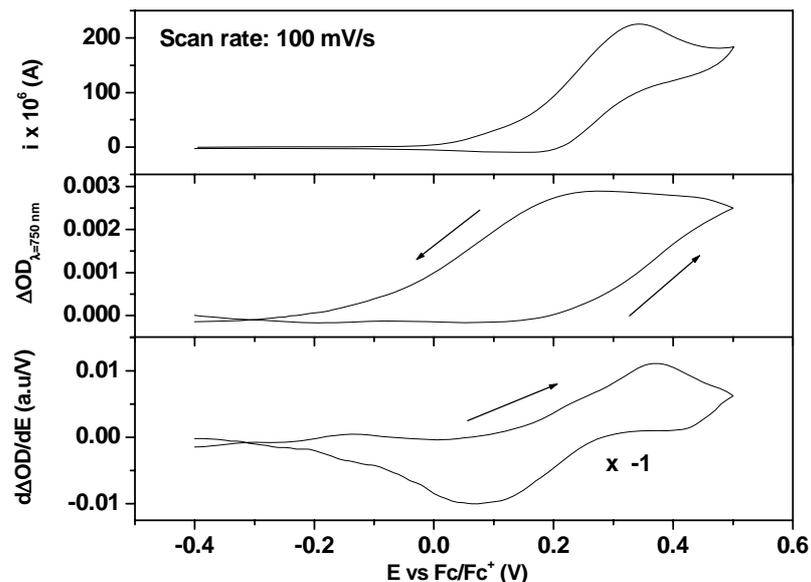


Figure S2 Spectroelectrochemical characterisation CV (a), CVA (b), and DCVA (c) of N621 free in solution. Arrows show the scan directions. In order to make it readily comparable to CV data, the oxidation process in the DCVA data were multiplied by -1 . All experiments of N621 complex were measured in 1:1 acetonitrile/*tert*-butanol solution containing 0.1 M TBAP using a piece of FTO glass as the working electrode with a scan rate of 100 mV/s .

3. CV of HW456/TiO₂ films

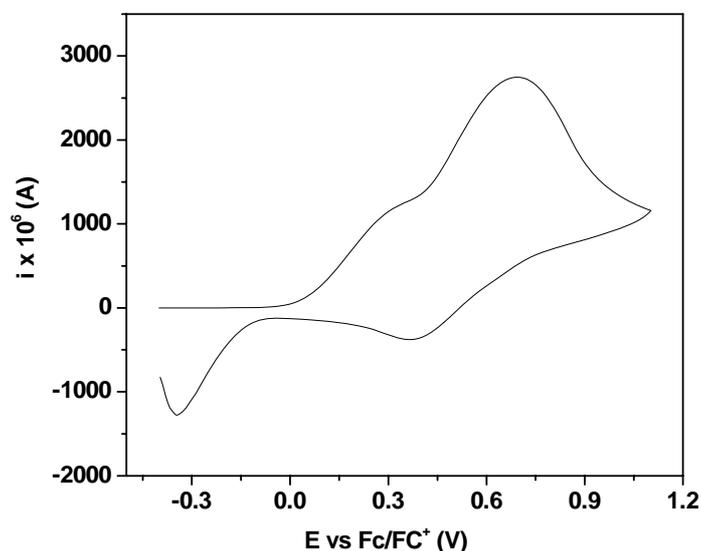


Figure S3 Cyclic voltammogram of HW456 on nanocrystalline TiO₂ film at a scan rate of 100mV/s in non-aqueous solution (0.1 M TBAP in acetonitrile).

2. Mercury interaction with –NCS ligands in dyes N621 and HW456

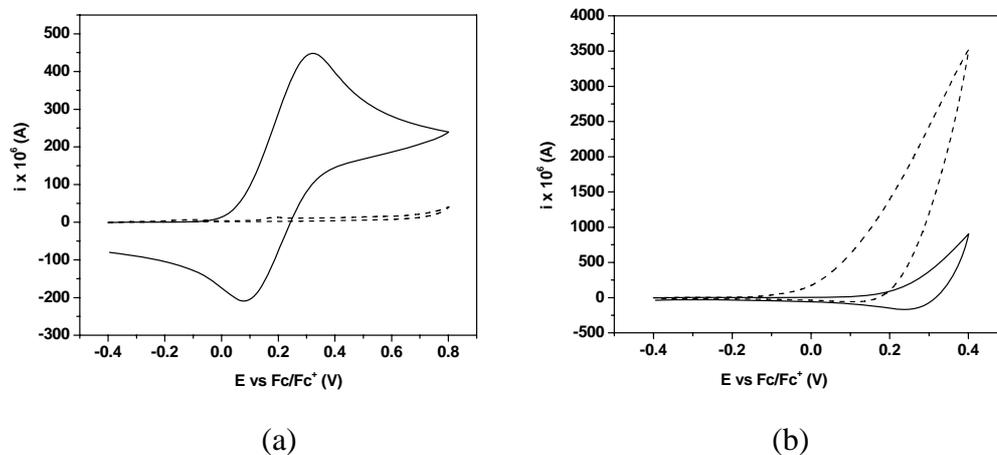


Figure S4 Cyclic voltammetry in the absence (solid line) and presence (dash) of mercury for (a) N621 and (b) HW456 on nanocrystalline TiO_2 film at a scan rate of 1 V/s in non-aqueous solution (0.1 M TBAP in acetonitrile).