Supplementary Material (ESI) for Journal of Materials Chemistry

Supplementary Information.

Kinetic competition in liquid electrolyte and solid state Cyanine Dye Sensitized Solar Cell.

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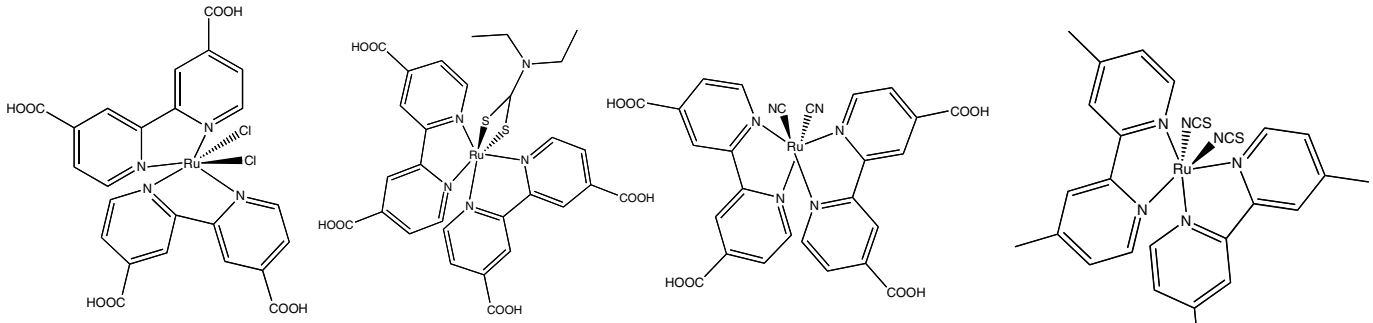
Figure 1S



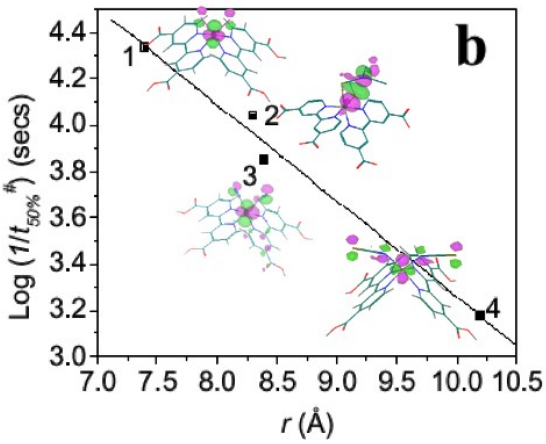


Figure 1S. Molecular structure of $Ru(dcbpy)_2$ (**1**), $Ru(dcbpy)_2DTC$ (**2**), $Ru(dcbpy)_2(CN)_2$ (**3**), $Ru(dcbpy)_2(NCS)_2$ (**4**). The **Figure 1S (b)** shows the linear correlation between the distance of the HOMO (D^+/D^*) of the dyes to the TiO_2 nanoparticle surface (X axis) and the estimated value ($1/t_{50\%}$) of the back electron transfer reaction .

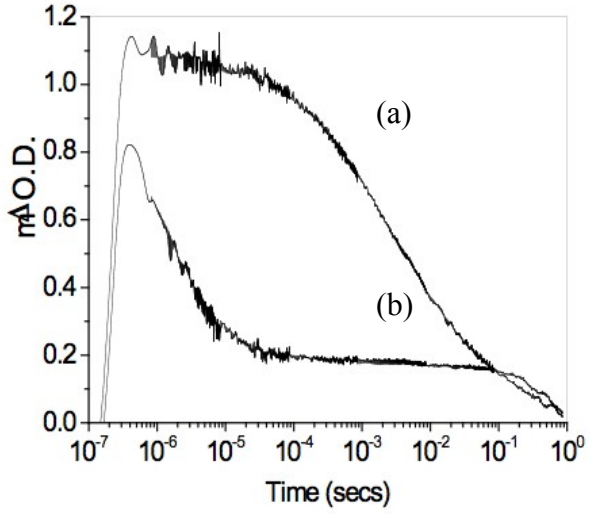


Figure 2S. Transient absorption kinetics observed for a complete N719 (dye 4 Figure 1S) sensitised TiO_2 (a) in absence of electrolyte and (b) in the presence of electrolyte. The electrolyte solution comprised 0.05M I_2 and 0.1M LiI in propylene carbonate. The monitored wavelength was 800nm.

As can be observed a biphasic decay is registered in the presence of electrolyte for N719 sensitised devices. The slow phase (0.1-1 s) at this wavelength is assigned to the absorption of I^-_2 species generated by the following reaction:

$Dye^+ + 2I^- + e^- \rightarrow dye + I^-_2$