Supporting Information

for

Femtosecond Infrared Transient Absorption Dynamics of Benzimidazole-based Ruthenium Complexes on TiO_2 Films for Dye-sensitized Solar Cells

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Table S1. Photovoltaic parameters of DSSC with photosensitizers N719, RD5, RD12, RD15, RD16, RD17 and RD18 under simulated AM-1.5G illumination (power 100 mW cm^{-2}) and active area 0.16 cm^2.

dye	J_{SC} /mA cm^{-2}	V_{OC} /mV	FF	η /%
N719	16.63	778	0.72	9.3
RD5	17.15	732	0.72	9.1
RD12	17.15	756	0.73	9.5
RD15	16.50	764	0.72	9.1
RD16	17.89	737	0.73	9.6
RD17	18.27	744	0.72	9.9
RD18	18.93	734	0.72	10.0

Table S2. The maximum peaks of the absorption and PL spectra and the corresponding Stokes shifts for the heteroleptic ruthenium complexes N719, RD5, RD12, RD15, RD16, RD17 and RD18 obtained from the results shown in Figure S1.

dye	λ_{abs} /cm^{-1}	λ_{PL} /cm^{-1}	Stokes shift /cm^{-1}
RD5	18622	12933	5689
RD12	18832	13242	5590
RD15	18484	13153	5311
RD16	18182	13359	4822
RD17	18315	13631	4684
RD18	18215	13039	5176

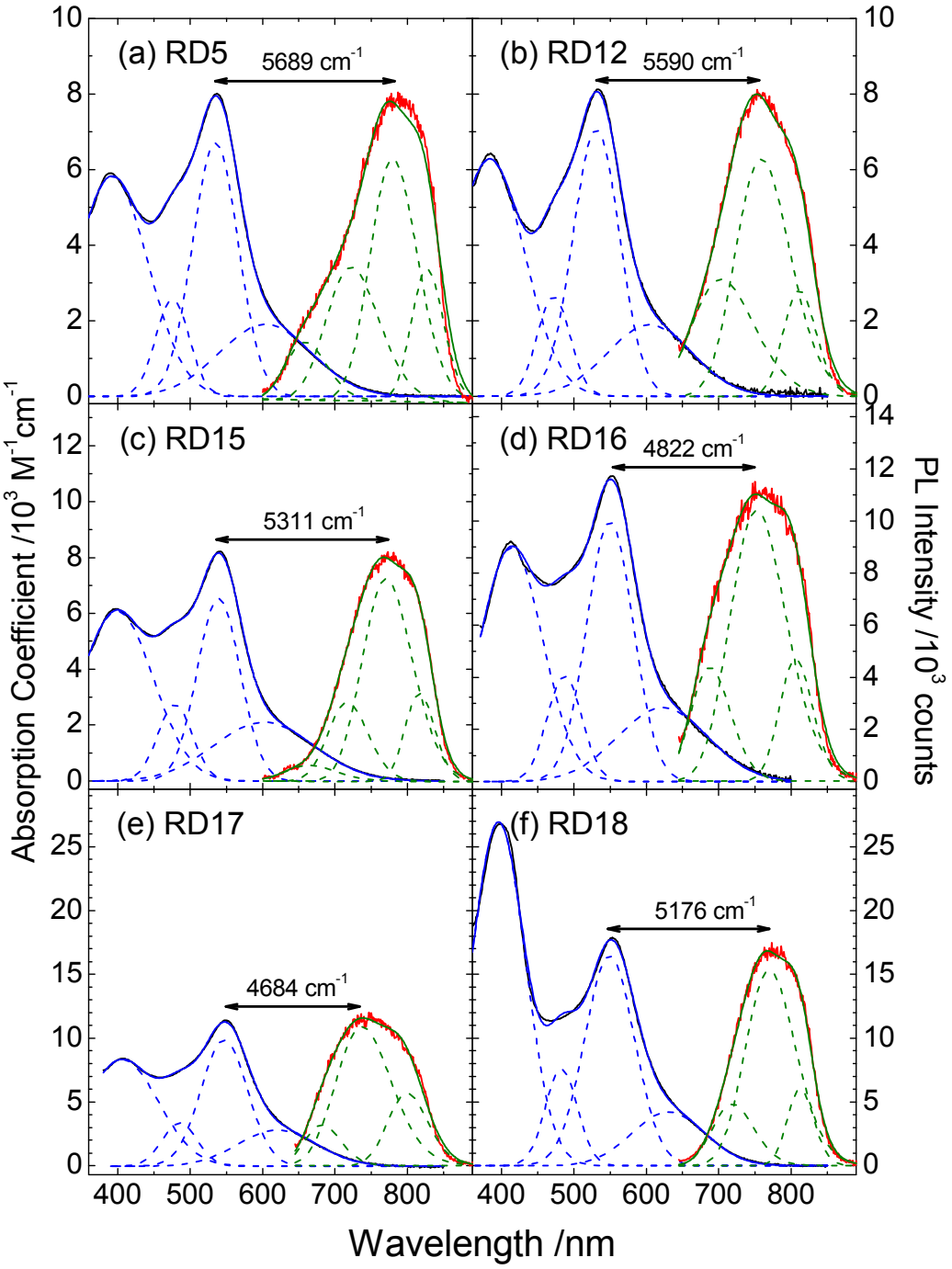

Figure S1. Absorption (black curves) and PL (red curves) spectra of (a) RD5, (b) RD12, (c) RD15, (d) RD16, (e) RD17 and (f) RD18 in DMF. The solid blue and solid olive traces are the simulated spectra of absorption and PL spectra, respectively; the corresponding dash traces are the de-convoluted components in each absorption and PL spectra. The arrows indicate the Stoke shifts between the two spectra according to the maximum intensities of the fitted curves.