Supporting information

Self-assembled porphyrins on modified zinc oxide nanorods: development of model systems for inorganic-organic semiconductor interface studies

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Figure S1. SEM images of ZnO grown at 80°C for 2.5 h on seed layer B using 0.05 M (a) and 0.02 M

(b) precursors.

Figure S2. SEM images of ZnO grown at 80°C for 6 h on seed layer A using 0.05 M (a) and 0.02 M (b)

precursors.

Figure S3. SEM images of ZnO grown at 80°C (a), 85°C (b) and 90°C (c) for 4 h on a seed layer B

using 0.02 M precursors.

Figure S4. The length of ZnOr grown on seeds A at 80⁰C (black) and on seed B at 80⁰C (blue) and

85⁰C (red) as a function of the reaction time. The precursor solution is not changed during the growth.

Figure S5. Absorption spectra of ZnOr substrates grown on seed B at 85⁰C for 2-10 h.

Figure S6. Emission spectra of CPTPP SAM on ZnOr. (Nanorods were grown on seed B at 85⁰C for 2-

10 h using 0.02 M precursors).

Figure S7. Absorption spectrum of CPTPP SAM on glass | ZnO (2 nm).

Figure S8. Absorption spectra of the a) oxide substrates of CPTPP SAMs and b) P-Si(OEt)₃ SAMs, c) absorption spectra of CPTPP SAMs and d) P-Si(OEt)₃ SAMs on oxide substrates without substrate subtraction.

Figure S9. Decay component spectra (lines with symbols) of CPTPP SAM on ZnO (a), TiO₂ (b), and Al₂O₃ (c) surfaces. The component lifetimes are indicated in the plots. The black solid lines present the time resolved spectra right after the excitation (at 0 ps). The zero delay time spectrum of the Al₂O₃ sample agrees well with the transient spectrum of the singlet excited state of porphyrin (as expected). However in the case of ZnO and TiO₂ samples the increased absorption in the 600-700 nm range indicate presence of some amount of porphyrin cations, which are formed with time constant shorter than the time resolution of the instrument. In a qualitative level the porphyrin cations are longer-lived in TiO₂ than in ZnO sample (0.8 vs 0.3 ps). However more advanced studies are required for quantitative evaluation of the excitation relaxation processes in such samples.