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Ultrafast photodynamics of charge transfer reactions in Indoline-sensitized ZnO solar cells

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Abstract content
 (Max 300 words)

The surprising efficiency of some dye-sensitized solar cells is largely attributed to the ultrafast efficient electron injection from the photo-excited state of the dye to the conduction band of the semiconductor. Femtosecond transient absorption spectroscopy measurements conducted on indoline-sensitized ZnO solar cells reveal this combination to be no exception. Primary charge transfer occurs on the 100 fs time scale. The measurements also reveal the rates of competing decay mechanisms and the regeneration rate of dye molecules after oxidation. The effect of different redox couples on the operation of the cell and the effect of an external potential, as under working conditions, on the primary charge transfer is discussed.

Apply to be
 considered for a student
 award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
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PhD

Main supervisor (name and email)
and his / her institution

Prof. Heinrich Schworer

Would you like to
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No

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