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CHEMISTRY & SUSTAINABILITY

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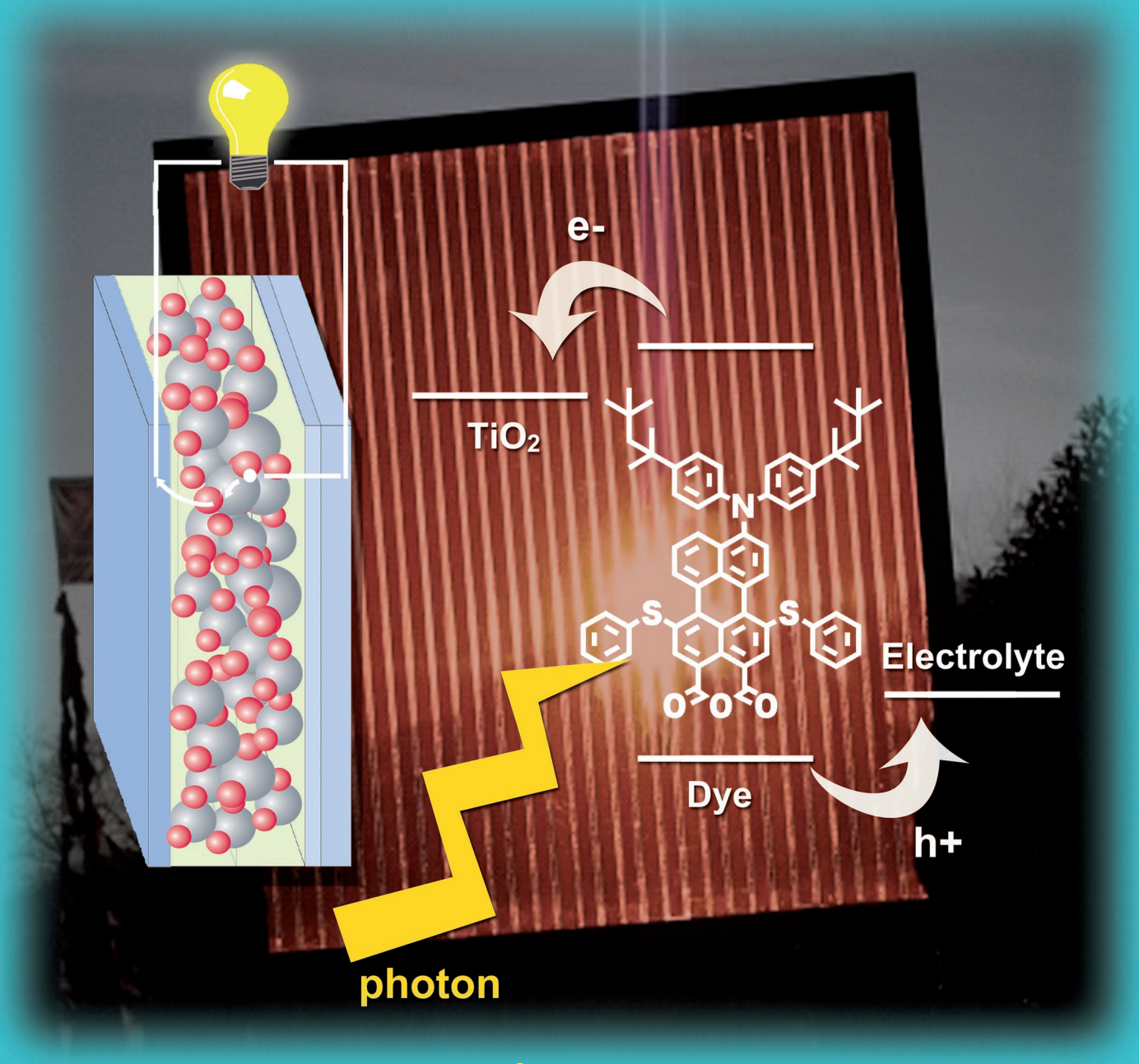

7/2008

Review: Solid Catalysts for Glycerol Conversion (F. Jérôme)

Viewpoint: Chemical Engineering Challenges in Sustainable Energy (A. Heller)

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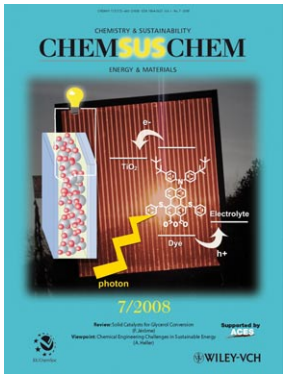
Cover Picture



Chen Li, Jun-Ho Yum, Soo-Jin Moon, Andreas Herrmann, Felix Eickemeyer, Neil G. Pschirer, Peter Erk, Jan Schöneboom, Klaus Müllen, Michael Grätzel, and Mohammad K. Nazeeruddin*

The cover picture shows the working principle of a dye-sensitized solar cell based on a novel perylene organic sensitizer (dye), which exhibits two absorption bands at 620 and 462 nm and reversible oxidation and reduction potentials. The energetic alignment of the HOMO and LUMO of the dye is well suited for electron injection into the TiO_2 conduction band as well as for regeneration of the dye by either an electrolyte containing a redox system or a solid-state hole conductor. In their Communication on page 615 ff., M. K. Nazeeruddin et al. report that a solar cell comprised of perylene-anchored TiO_2 films and the iodine–iodide redox couple yields an unprecedented incident monochromatic photon-to-current conversion efficiency of 87%. The thiophenol donor groups provide directionality in the excited state leading to an improved short-circuit current density, open-circuit potential, and power conversion efficiency under standard AM 1.5 solar conditions.