Mesoporous Oxide Photoelectrodes and Dye Sensitized Solar cells

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Mesoporous oxide electrodes made up of a network of nanocrystalline semiconductor oxide particles have recently attracted great research interest. The pores between the particles are filled with a semiconducting or a conducting medium forming a junction of extremely large contact area. Such mesoporous electrodes have found applications in a number of areas in particular dye sensitized solar cells. This lecture will summarize the most recent development in the latter field including the photovoltaic performance of new heteroleptic ruthenium sensitizers and the use of ionic liquid as redox electrolytes. A tandem cell for visible light induced water cleavage based on the superposition of a dye sensitized TiO2 film with a tungsten trioxide or iron oxide layer acting as photoanode will also be described.