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### **Studies of Interfacial Electronic Processes in Nanoporous TiO<sub>2</sub> Thin-Films<sup>1</sup>**

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Metal-oxide nanoparticles sensitized to visible light by covalent attachment of molecular adsorbates have attracted considerable attention in recent years due their central role in technologies for solar energy conversion, including dye-sensitized solar cells (DSSCs) and solar photocatalysis. However, the mechanisms of interfacial electron transfer and subsequent electron transport induced by photoexcitation of the molecular adsorbates remain only partially understood. We report recent progress in studies of nanoporous TiO<sub>2</sub> thin-films functionalized with molecular adsorbates, with emphasis on interfacial electron injection, molecular rectification and the mechanism of electron transport through sintered TiO<sub>2</sub> nanoparticles in thin-films relevant to DSSCs.

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