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FUNCTIONAL NANOMATERIALS BASED ON WIDE BAND GAP SEMICONDUCTORS. APPL IN PHOTOELECTROCHEMICAL, ELECTROCHROMIC AND PHOTOCHROMIC DEVICES

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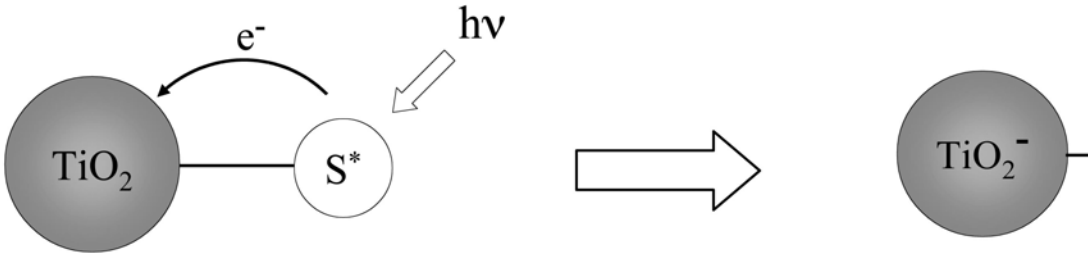
The inherent electronic nature of semiconductor metal oxides can directly interact with molecu manner not energetically possible with insulators. More specifically, an excited sensitizer, electron to the semiconductor forming a charge separated pair.



For artificial photosynthetic applications, the importance of this charge-separation process molecular basis for the conversion of photons into potential energy. The process can als photochromic devices in which photoinduced charge injection by the molecular sensitizer is fol

an electron acceptor co-adsorbed on the surface of the semiconductor. Other interesting appl the possibility of binding a molecular system to nanocrystalline wide band-gap semiconductors, of new types of electrochromic devices which appear to be promising for display applications.[1]

The lecture covers our recent investigations on TiO_2 nanomaterials functionalized with a ser osmium dyes for applications in the fields of solar energy conversion and of optical memor devices. Recent advances in the design of new electron mediators based on transition met discussed.

[1] R. Argazzi, N. Y. Murakami Iha, H. Zabri, F. Odobel, C. A. Bignozzi. "Design of Molecular Dyes for Application in Photoelectr Electrochromic Devices based on nanocrystalline Metal Oxide Semiconductors" Coordination Chemistry Reviews. 2004, 248, 12