

卟啉、酞菁共敏化二氧化钛纳米电极

邓慧华,沈耀春,陆祖宏,毛海舫,许慧君

东南大学分子与生物分子电子学实验室.南京(210018);中国科学院上海有机化学研究所.上海(200032);
中国科学院感光化学研究所.北京(100101)

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摘要 研究了染料对锌卟啉-氢卟啉(ZnTSPP-H~2TSPP)、锌卟啉-镓酞菁(ZnTSPP-GaTSPc)共敏化二氧化钛纳米电极的光电转换特性和H~2TSPP,GaTSPc在电极表面的聚集态对光电转换的影响,共敏化显著提高了电极的光电转换并产生了混合效应。提出了低占据电荷转移的共敏化机理。

关键词 [卟啉](#) [酞菁](#) [二氧化钛](#) [纳米相材料](#) [电极](#) [锌络合物](#) [镓络合物](#) [光电变换](#) [电荷转移](#)

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Cosensitization of a nanostructured TiO₂ electrode with tetrasulfonated porphyrins and phthalocyanine

Deng Huihua, Shen Yaochun, Lu Zuhong, Mao Haifang, Xu Huijun

Southeast Univ, Molec & Biomolec Electr Lab. Nanjing(210018); Shanghai Inst Organ Chem., CAS. Shanghai(200032); Inst Photog Chem, Acad Sinica. Beijing(100101)

Abstract Photo-to-electric conversion of a nanostructured TiO₂ electrode cosensitized with dye pairs of ZnTSPP-H~2TSPP and ZnTSPP-GaTSPc was investigated. Doping of ZnTSPP reduces self-aggregation of H~2TSPP and GaTSPc in the surface of the electrode. Cosensitization markedly enhances the photoelectric response of Q band and in the meantime greatly decreases that of Soret band under monochromatic illumination. But this decrease in Soret band is off-set by the enhancement of Q band. As a result, cosensitization improves the total photo-to-electric conversion in the whole wavelength range and creates the mixed effect in short-circuit photocurrent. The photoelectric behaviors of the cosensitized electrode is attributed to the presence of a low-lying charge-transfer state originating from the formation of heteroaggregates in dye pairs of ZnTSPP-H~2TSPP and ZnTSPP-GaTSPc.

Key words [PORPHYRIN](#) [PHTHALOCYANIN \(=PHTHALOCYANINE\)](#) [TITANIUM DIOXIDE](#) [NANOPHASE MATERIALS](#) [ELECTRODE](#) [ZINC COMPLEX](#) [GALLIUM COMPLEX](#) [PHOTOELECTRICAL CONVERSION](#) [CHARGE TRANSFER](#)

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