

研究论文

## 利用强度调制光电流谱研究TiO<sub>2</sub>薄膜中染料不均匀分布现象

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**摘要** 利用强度调制光电流谱(IMPS)研究了不同微结构的TiO<sub>2</sub>薄膜在不同的浸泡时间条件下的染料分布情况,分析了染料分布对染料敏化太阳能电池光伏性能的影响. 研究表明, TiO<sub>2</sub>薄膜中确实存在染料的不均匀分布现象,染料不均匀分布对太阳能电池的光伏性能有显著的影响.

**关键词** [强度调制光电流谱](#) [染料敏化](#) [太阳能电池](#) [染料吸附](#)

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## Investigation of Inhomogeneous Dye-adsorption in Porous TiO<sub>2</sub> Films by Intensity Modulated Photocurrent Spectroscopy

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**Abstract** The phenomena of inhomogeneous dye-adsorption in porous TiO<sub>2</sub> film was likely to exist in dye sensitized solar cells(DSC). Dye-adsorption behavior in two kinds of TiO<sub>2</sub> films with different microstructure and different adsorbing time was investigated by the Intensity Modulate Photocurrent Spectroscopy(IMPS). The influence of inhomogeneous dye-adsorption for IMPS response and the photovoltaic of DSC was discussed. The result shows that IMPS is a useful tool to detect inhomogeneous dye-adsorption occurred in some TiO<sub>2</sub> films. The phenomena of inhomogeneous dye-adsorption had notable influence on the photovoltaic of DSC.

**Key words** [Intensity Modulate Photocurrent Spectroscopy\(IMPS\)](#) [Dye-sensitized](#) [Solar cell](#) [Dye-adsorption](#)

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