

Full Paper

于离子液体和介孔SBA-15为支架的准固态染料敏化太阳能电池

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摘要 利用介孔SBA-15作为支架材料制备了一类准固态电解质。离子电导测试表明SBA-15

的引入增加了准固态电解质的电导率。通过拉曼光谱证实了聚碘离子 I_3^- 和 I_5^- 的存在,

并且通过计算表明聚碘离子的扩散系数是 I^- 的两倍。经过组装优化, 基于该准固态电解质的电池在AM1.5, 75 mW cm⁻²的光强下可得到4.3%的光电转化效率。

关键词 [染料敏化, 太阳能电池, 准固态电解质, SBA-15](#)

分类号

Ionic Liquid Based Electrolyte with Mesoporous Silica SBA-15 as Framework for Quasi-solid-state Dye-sensitized Solar Cells

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Abstract Quasi-solid-state electrolytes were fabricated with mesoporous silica SBA-15 as a framework material. Ionic conductivity measurements revealed that SBA-15 can enhance the conductivity of the quasi-solid-state electrolyte. The diffusion coefficients of polyiodide ions such as and which were confirmed by Raman spectroscopic measurement, were about twice larger than that of I^- . The optimized photoenergy conversion efficiency of dye-sensitized solar cells (DSSC) with the quasi-solid-state electrolyte was 4.3% under AM 1.5 irradiation at 75 mW·cm⁻² light intensity.

Key words [Dye-sensitized solar cell](#) [quasi-solid-state electrolyte](#) [SBA-15](#)

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