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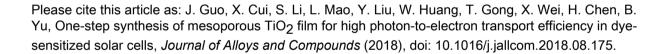
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1 One-step Synthesis of Mesoporous TiO₂ Film for High

2 Photon-to-Electron Transport Efficiency in Dye-sensitized

3 Solar Cells

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16

Abstract

- 17 The mesoporous TiO₂ film is prepared by one-step vapor-thermal process using the
- 18 titanium precursor directly. Compared with the traditional annealing methods, the
- 19 prepared vapor-thermal mesoporous TiO₂ films (VTMTF) reduce the resistance of
- 20 interfaces effectively, possess more homogeneous pore distribution and own less
- 21 nanoparticles agglomeration. Subsequently, the photoanodes based on VTMTF could
- significantly decrease the interfaces resistance of the TiO₂/dye/electrolyte. Owing to
- 23 these, the dye-sensitized solar cells based on VTMTF showed an improved power
- conversion efficiency of 6.22%, compared with the traditional annealing porous TiO₂
- 25 (3.89%).
- 26 **Keywords:** mesoporous TiO₂ film; photon-to-electron transport efficiency; power
- 27 conversion efficiency; dye-sensitized solar cells

28 Introduction

- 29 Dye-sensitized solar cells (DSSCs) have attracted intensive attention due to its merits
- 30 of low-cost, facile fabrication, reasonable high power conversion efficiency (PCE),

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