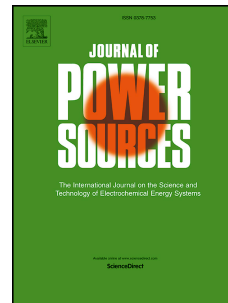


Accepted Manuscript

Semi-closed tubular light-trapping geometry dye sensitized solar cells with stable efficiency in wide light intensity range

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PII: S0378-7753(14)00363-2

DOI: [10.1016/j.jpowsour.2014.03.050](https://doi.org/10.1016/j.jpowsour.2014.03.050)

Reference: POWER 18825

To appear in: *Journal of Power Sources*

Received Date: 1 February 2014

Accepted Date: 14 March 2014

Please cite this article as: W. Zeng, M. Wang, Y. Li, J. Wan, H. Huang, H. Tao, D.L. Carroll, X. Zhao, D. Zou, G. Fang, Semi-closed tubular light-trapping geometry dye sensitized solar cells with stable efficiency in wide light intensity range, *Journal of Power Sources* (2014), doi: 10.1016/j.jpowsour.2014.03.050.

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1 **Semi-closed tubular light-trapping geometry dye sensitized solar**
2 **cells with stable efficiency in wide light intensity range**

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15

16 **Abstract**

17 A semi-closed tubular light-trapping geometry is developed for dye sensitized
18 solar cell to stabilize its power conversion efficiency (PCE) in wide light intensity
19 range. The tubular cell consists of a dye-sensitized porous TiO₂ coated and
20 semi-closed glass tube as photoanode, an opaque platinum metal foil wrapped on the
21 outside of photoanode as counter electrode, and electrolyte filling in their interlayer.
22 The open end of photoanode serves as the only light entrance. The experiment,
23 calculation and optical studies demonstrated that the tubular geometry is beneficial to
24 light trapping and absorption, charge transport and heat dissipation, in comparison to
25 a planar counterpart. The PCE of tubular cell can remain about 85% of its original

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