

Abstract Submitted
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Markedly Enhanced Performance of Dye Sensitized TiO₂ Nanoparticle Solar Cells via Rational Surface Treatment MARGARET SCHEINER¹, Cornell University, XUKAI XIN, Iowa State University, ZHIQUN LIN, Iowa State University — Dye sensitized solar cell (DSSC) was fabricated with the P-25 TiO₂ nanoparticle film sensitized with N719 dye. TiCl₄ treatment was found to increase the power conversion efficiency of DSSC. More importantly, subsequent treatment with O₂ plasma further enhanced the efficiency, while the O₂ plasma processing of an untreated TiO₂ photoanode resulted in a lower efficiency. With TiCl₄ and O₂ plasma treatments, dye sensitized TiO₂ nanoparticle solar cell with 21 μm thick active layer illuminated under 100 mW/cm² exhibited a markedly enhanced power conversion efficiency of 8.35% as compared to 3.86% for untreated cells.

¹This work was done in Iowa State University.

Xukai Xin
Iowa State University

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