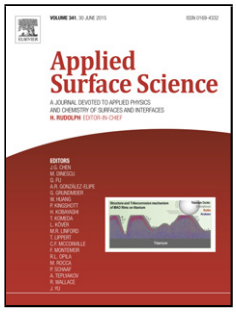

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Efficiency Enhancement using Voltage Biasing for Ferroelectric Polarization in Dye-sensitized Solar Cells

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Highlight

1. We employed ferroelectric Fe-doped bismuth titanate (Fe-BLT) to apply to Dye-sensitized solar cells (DSSCs).

2. Nanometer-size Fe-doped bismuth titanate (Fe-BLT) particles were prepared via a high-energy ball milling process.

3. To improve the efficiency, we fabricated DSSC cells with TiO2 and nFe-BLT mixed compound powder.

4. With applying DC bias, the light-to-electricity conversion efficiency (PCE) of DSSC unit cells could be improved about 64 % compared to that without applying DC bias.

Abstract

Dye-sensitized solar cells (DSSCs) are one of the most promising third generation solar cells that have been extensively researched over the past decade as alternative to silicon-based solar cells, due to their low production cost and high energy-conversion