Dye-Sensitized Solar Cells: An Overview of State-of-the-Art, Challenges and Perspectives

A. Cheknane

Department of Renewable Energy Engineering
Laboratoire des Semiconducteurs et Matériaux Fonctionnels.
Université Amar Telidji de Laghouat. Bd des Martyrs. BP37G. Laghouat (03000). Algérie

Abstract

Dye-sensitized solar cells (DSSCs) have many advantages over conventional silicon-based solar cells due to their low cost transparency, and high power conversion efficiencies. Dye-sensitized solar cell performs well under cloudy and artificial light conditions. The challenge is to increase cell efficiency. Published in the prestigiousscientific journalNature, the research team headed by the inventorof the DSSC (Grätzel) describes a newdeposition processfor makingphotosensitivepigmentcellsto reach 15% efficiency.In the present communication, we distill the current state-of-the-art, discuss new concepts, highlight the scientific challenges, and analyze the perspectives for the future development of these cells.