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RESEARCH AND INDUSTRIAL TRENDS OF DYE-SENSITIZED SOLAR CELLS

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Dye-sensitized solar cell (DSSC) utilizing nanotechnology and photosynthesis attracts much attention due to its high solar-to-electricity conversion efficiency, up to 11% at AM 1.5G condition, and low cost. DSSCis composed of the high surface area nanoparticle oxide film that is sensitized with dye molecules, the redox electrolyte and the metal counter electrode. Although fundamental and application researches have been extensively made, more advanced progresses are required in order to reach much higher efficiency and be commercialized. All of the components, photoanode materials, dye molecules, electrolytes and counter electrodes, comprising DSSC as well as energetics and kinetics should be carefully considered in fabricating high efficiency dye-sensitized solar cells. In this talk, many researches that have been devoted to DSSCs are introduced and recent progress in industries will be also presented.