

Effect of Ligand Attached to Fluorescein on the Photocurrent of Solid-state Dye-sensitized Solar Cells

P.N. Dissanayake¹, G.R.A. Kumara¹, P.M. Sirimanne²

¹National Institute of Fundamental Studies, Kandy, Sri Lanka

²Department of Science and Technology, Uva Wellassa University, Badulla, Sri Lanka

Email: psirimanne@hotmail.com

Abstract

Organic dyes have received much attention due to environmental compatibility. Fluorescein is one of the environmental friendly dyes. The effect of ligands attached to fluorescein on the photo-performance of TiO_2 |dye|p-semiconductor type solar cells was examined. CuI and CuSCN were used as the p-type semiconductor. A relatively higher photocurrent was observed for TiO_2 |dye|CuI cells than TiO_2 |dye|CuCNS cells. The Maximum photocurrent was observed for mercurochrome among the dyes used from fluorescein family. Our results give an idea that not only the chromophore but also the ligands attached to the chromophore influences the absorption properties of the dyes and thereby dye- sensitized solar cells.

Keywords: organic dyes, solid-state cells, effect of the ligands