Generation of inhomogeneous photocurrent in solid-state TiO_2|dye|CuI cells and effect of ligands attached to surfactant on morphology of CuI films

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Abstract

Microwave conductivity is observed in TiO_2 and CuI films at room temperature. Organic dye pyrogallor red is found to sensitize TiO_2 and CuI in solid-state TiO_2|dye|CuI cells. Effect of ligands attached to crystal growth inhibitors on morphology of CuI films is studied. A weaker crystal growth inhibition was observed when size of ligands attached to surfactant is increased. Reasonable explanations are given for observed inhomogeneous photocurrent and its degradation under illumination.

Keywords: Tripropylamine hydrothiocyanate; Pyrogallor red; Solid-state solar cell