Abstract

Photocurrent enhancement in a dye sensitized photoelectrochemical (PEC) cell with Cu/p-CuI/M-C_{18} LB films were studied by minimizing the formation of dye aggregates of M-C_{18} LB films on p-CuI layer. LB films of M-C_{18} were deposited under biasing conditions during the LB deposition process on p-CuI layer with three electrode configuration set up coupling to the LB Trough. LB films prepared under positive biasing conditions may enhance the photocurrent quantum efficiencies minimizing the formation of dye aggregates. Electrolyte used was KI(10^{-2}M) + I_2 (10^{-4}M) . Maximum photocurrent efficiency (Φ%) obtained was ≈ 22 % .

Stable photocurrents were obtained for p-CuO photoelectrochemical cells in the presence of (10^{-3}M)KI + 10^{-4}M) redox couple. Easy fabrication method of nano p-CuO films on copper sheets was presented. Band gap estimated was ≈1.38eV. Nano thin films of n-Cu_2O was produced on the copper sheets by boiling copper sheets in a 10^{-3}M HCl solutions as observed from the SEM pictures. Onset potential of the nano thin films of n-Cu_2O were found to reach more negative compared to that of the n-Cu_2O microcrystals favoring the H_2 evolution from water efficiently. Remarkable H_2 generation was observed increase of nano thin films compared to that of microcrystals.