Aggregation control of Langmuir Blodegett (LB) films of di octadecyl Merocyanine via applying a potential

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Possible ways to enhance the photocurrent via preventing the formation of aggregates were investigated. Di octadecyl Merocyanine (C_{18}-Mero-C_{18}) molecules were deposited on conductive glass plate by LB technique. A constant voltage was applied to glass plate using conventional potentiostatic method with three-electrode configuration during the deposition. Absorption spectra of deposited layers were obtained and absorption spectra consist of the three peaks at 510nm (dimmers) 540 (monomers) and 580nm (J-aggregates). In the Negative biasing condition dimmers and J- aggregates

are more abundant than monomers. In the positive biasing condition monomers are more abundant than dimmers and J- aggregates.

AFM pictures of deposited dye layers by LB technique show that in the positive biasing condition, the surface of the dye film is 2D where as in the negative biasing condition it is 3D due to formation of J-aggregates.

A photocurrent enhancement can be seen in the photo electrochemical cell when formation of J-aggregates is controlled by applying positive voltage during the LB film is formation.

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