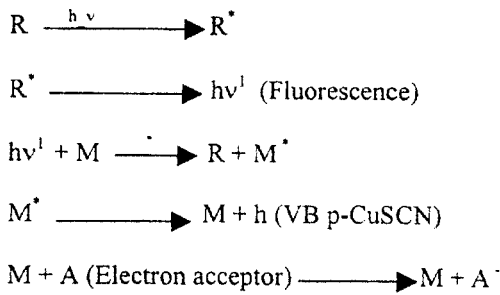


E2-37 Application of interlocked Langmuir-Blodgett films on p-CuSCN with sensitized photocurrent

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Surface pressure isotherms of M-C₁₈, R-C₁₈, M-C₁₈ + R-C₁₈ on the water surface confirm that Rhodamine double chain -C₁₈ dyes interlock Methyl Violet-C₁₈ dye molecules. The area occupied by one molecule (nm²) for R-C₁₈ is similar to that of the area of (R-C₁₈+M-C₁₈) mixture. Polarized absorption spectra and photocurrent spectra reveal that the vibration planes of excited electrons in the Methyl Violet-C₁₈ chromophore are perpendicular to the vibration planes of Rhodamine having double -C₁₈ chain. The interlocked monolayer, sensitizes p-CuSCN in an interesting way. The mechanism of the sensitization is believed to be radiative energy transfer between Rhodamine and Methyl Violet:



The fluorescence of R-C₁₈ is absorbed by M-C₁₈ in order to excite M molecules. It is known that the emitted photon due to fluorescence is polarized. In this experiment this polarized plane is perpendicular to the electron vibration planes in the M-C₁₈ molecules. The excitation of the electrons in the M-C₁₈ molecules is possible due to the absorption of the re-emitted photon from Rhodamine -C₁₈. The absorption spectrum of M-C₁₈ LB films overlaps with the R-C₁₈ emission spectrum. Photocurrent for the double dye systems are higher in comparison to that of single dye systems.

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