

Characterization of Pure and Mixed Langmuir and Langmuir-Blodgett Films of Some Fluorescent Naphthalimide Dyes

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Langmuir and Langmuir-Blodgett (LB) films formed of some fluorescent dyes, derivatives of 4-aminonaphthalimide, and their binary mixtures with the liquid crystal 4-heptyl-4'-cyanobiphenyl (7CB) have been studied. Surface pressure versus mean molecular area isotherms for Langmuir films have given information about the alignment of molecules in a monomolecular layer at the air/water interface. The absorption and fluorescence spectra of LB films have revealed the occurrence of aggregates among dye molecules. In the ground electronic state some fraction of aggregates of J-type have appeared, while in the excited state the excimers have been created. The latter statement has been confirmed by additional absorption and fluorescence measurements performed for dyes dissolved in 7CB and placed in sandwich cells of 10 μm in thickness.

Key words: Naphthalimide Dye; Liquid Crystal; Langmuir-Blodgett Film; Electronic Absorption Spectra; Fluorescence Spectra.