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THE SIGNIFICANT ROLE OF POLAR HEADGROUP OF THE AMPHIPHILES IN THE BREWSTER ANGLE MICROSCOPY

Cristina Roldán-Carmona[a], Juan J. Giner-Casares[a,b], Marta Pérez-Morales[a], María T. Martín-Romero[a], Luis Camacho

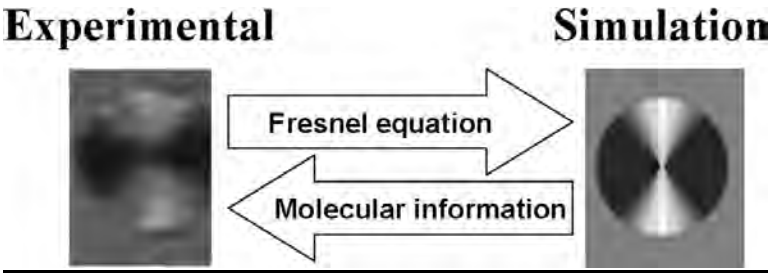
[a]*Department of Physical Chemistry and Applied Thermodynamics, University of Córdoba, Campus de Rabanales, Edificio Marie Curie, Córdoba E-14014, Spain.*

[b]*Max Planck Institute of Colloids and Interfaces, Interfaces Department, Science Park Golm, 14476 Potsdam, Germany*

q22rocac@uco.es

The Brewster Angle Microscopy (BAM) is a powerful microscopy technique allowing the in situ visualization of the morphology of Langmuir monolayers at the air/water interface. Although the use of the BAM for attaining structural insights in the molecular arrangement in Langmuir monolayers is widespread[1,2], in this work we examine the reflection of a Langmuir monolayer taken into account the influence of the polar headgroup of the amphiphiles, a rather different perspective than the classical.

The relevance of the polar headgroup as the main cause of the BAM features has been the focus of a reduced number of BAM studies. Different theoretical scenarios are considered, concerning the size and absorption of radiation of the polar headgroup. Two qualitative examples showing physical phenomena regarding the reflectivity changes in BAM experiments are discussed. Special interest has the anisotropy in the BAM images as inner textures, allowing by simulation of the textures in the observed domains to get quantitative structural information of the molecular arrangement of the monolayer. The quantitative assessment of the detailed molecular arrangement of the polar headgroup by BAM is highly valuable, as this information can hardly be obtained from other experimental techniques. In this work it is revised in detail the procedure from the recent bibliography for extracting quantitative structural data from the experimental BAM pictures for further application of this model to different Langmuir monolayers.



[1] Vollhart, D. *Adv Colloid Interface Sci,* **2006**, *123,* 163.

[2] Gonzalez-Delgado, AM.; Perez-Morales, M.; Giner-Casares, J.J.; Muñoz, E.; Martín-Romero, MT.; Camacho, L *J Phys Chem B* **2009**, 113, 13249.