Preparation and characterization of a calixarene derivative compound Langmuir–Blodgett thin film

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Langmuir–Blodgett (LB) films of calixarene derivative (CA) compound have been studied. Stable monolayers of the CA have been formed at the air/water interface [1, 2]. In our work, CA is chemically immobilized on the surface of ITO as a new solid surface. On the basis of the surface pressure–mean molecular area isotherms of Langmuir films, the alignment of the molecules on the air–water interface has been estimated. The Langmuir films were transferred onto the ITO surface pressures below the collapse point. Langmuir films were spread onto ultra pure water by dissolving the CA in chloroform. The formation of CA monolayer at air–water interface, II–A isotherm and stability of this monolayer are studied as a function of CA concentration. The optimal conditions for transfer of the Langmuir–Blodgett film (LB film) of CA onto the surface of ITO substrate are determined. The Langmuir films were prepared in a Mini trough system trough using ultrapure water, at \( T = 25 \) °C for the subphase. LB films of the calixarene derivative were investigated by atomic force microscopy (AFM), contact angle, FTIR, scanning electron microscopy (SEM) methods. The results obtained have allowed conclusions to be drawn about the arrangement of the CA on the air-solid substrate interface.

References