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Τίτλος:

«Viscoelasticity of Semifluorinated alkanes at the air-water interface»

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Abstract

We investigated the viscoelastic properties of semifluorinated alkanes $F(CF_2)_n(CH_2)_mH$ of varying architecture, spread on the air-water interface. Langmuir monolayers of these model ‘doubly-hydrophobic’ (or ‘amphiphobic’) macromolecules exhibit some kind of surface ordering, as detected by pressure area isotherms and complementary structural studies. The films exhibited a solid-like viscoelastic response (analogous to colloidal glasses in the bulk) throughout the whole range of surface pressures studies. As the surface pressure increased, the values of the storage and the loss surface moduli increased as well. The film’s stability was probed by compression-expansion cycles that showed pronounced hysteresis around the transition. With the help of these experiments, as well as studies of temperature dependence and AFM measurements on the obtained films, we attribute the transition to tilting and induced order of the ‘tethered’ macromolecules due to surface pressure. Our findings appear to suggest ways for manipulating the surface structure and rheology of such types of macromolecules.

Ο Πρόεδρος του Τμήματος

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