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Morphological Study of Langmuir Polymer Films by means of Atomic Force Microscopy and MD Simulations RENATE REITER, University of Freiburg, Experimental Polymer Physics, VOLKER KNECHT, University of Freiburg, FIT, SIVASURENDER CHANDRAN, GNTER REITER, University of Freiburg, Experimental Polymer Physics — In general it is difficult to reproduce well defined morphologies of Langmuir polymer films (LPFs) because they have a high propensity to form non-equilibrium states. We present a systematic study based on different compression protocols designed to allow for relaxations of LPFs under well defined conditions. The homo peptide poly--benzyl-L-glutamate (PBLG) was chosen for this study because it is a well investigated system that represents the relaxational behaviour of rod-like molecules which is expected to show less complexity than coiled polymer molecules. Our results demonstrate that experimentally manipulating the course of relaxations in LPFs has tremendous impact on the ordering of the molecules. Coarse grain molecular dynamics simulations were performed under comparable conditions. The results match the experimental observations reasonably well and allow to zoom into molecular details which are not resolved experimentally.

Renate Reiter
University of Freiburg, Experimental Polymer Physics

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