

Abstract Submitted
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Flow Induced Growth of Striped Alkane Monolayers.¹ M. BAI, H. TAUB, A. DIAMA, U. Mo.-Columbia, K. KNORR, U. des Saarlandes, U. G. VOLKMANN, P. U. Catolica Chile, F. Y. HANSEN, Tech. U. of Denmark — We report our observation of the growth of striped monolayer phases of alkanes when deposited from a solution under flow. AFM measurements show that the structure and morphology of dotriacontane (n -C₃₂H₆₆ or C32) films grown from solution depend sensitively on the flow direction over a SiO₂-coated Si(100) substrate. The C32 film exhibits one or two layers adjacent to the SiO₂ surface in which the molecules are oriented with their long axis parallel to the interface followed by a striped monolayer of perpendicularly oriented molecules. The stripes form along the direction of solution flow with typical dimensions of a few micrometers wide and a few hundred micrometers long, depending on the solution concentration. A striped morphology is also observed for C29 grown under similar conditions. Grazing incident-angle x-ray diffraction measurements indicate that the C32 stripes are crystalline and can be indexed by a rectangular unit cell. We offer some speculations on the origin of the striped morphology.

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