Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Comparison of the Wetting Behavior of Dotriacontane Films Adsorbed on SiO_2 Surfaces by Physical Vapor Deposition with that of Films Dip-coated in Solution[1] E.A. CISTERNAS, T. CORRALES, V. DEL CAMPO, U.G. VOLKMANN, P. U. Catolica de Chile, H. TAUB, U. Mo.-Columbia, F.Y. HANSEN, Tech. U. Denmark — We have used high resolution ellipsometry and Atomic Force Microscopy (AFM) to compare the structure and morphology of dotriacontane (n-$C_{32}H_{66}$ or C32) films deposited by two different methods on Si(100) wafers coated with their native oxide. The vapor deposition was done in high vacuum with a substrate temperature below the C32 bulk melting point, while the dip-coated samples were prepared at room temperature. Heating/cooling cycles at a rate of 2 K/min were performed in air on both types of samples and monitored simultaneously by high resolution ellipsometry and stray light intensity measurements to determine the film thickness and roughness, respectively. The samples had a thickness range of 20-160 Å and were optically smooth, but AFM measurements showed the dip-coated films to be less homogeneous and rougher on a nanometer length scale. During the first three heating/cooling cycles, the phase transitions and the wetting behavior of both types of samples differed significantly, particularly as revealed by their stray light intensity.

[1]Supported by grants: FONDECYT 1060628 and NSF DMR-0411748.

Ulrich G. Volkmann
P. Universidad Catolica de Chile

Date submitted: 29 Dec 2006 Electronic form version 1.4