

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Subdiffusive Dynamics of Photo-Addressable Self-Assembled Monolayers GUANJIU FANG, NOEL CLARK, JOSEPH MACLENNAN, Department of Physics, University of Colorado, Boulder, CO 80309, USA, MATTHEW FARROW, Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309, USA, DAVID WALBA, University of Colorado, YOUNGWOON YI, THOMAS FURTAK, Department of Physics, Colorado School of Mines, Golden, CO 80401, USA — Self-Assembled Monolayers (SAMs) synthesized on glass and incorporating azobenzene are illuminated with green light at normal incidence to study the effect of photo-isomerization on in-plane molecular orientation. Measurements of the monolayer birefringence at the glass-gas interface show that the SAM orientation and order parameter dynamics are subdiffusive, characterized by a stretched exponential relaxation with a distribution of relaxation times. Order decays with power law relaxation and exponents that decrease with increased initial writing intensity and/or duration, indicative of orientational trapping wells with a distribution of depths. Results on dynamics of reorientation at the glass-solvent interface will also be presented. This work was supported by NSF Grant CHE-0079122 and NSF MRSEC Grant DMR-0213918.

Noel Clark
University of Colorado

Date submitted: 07 Dec 2004

Electronic form version 1.4