Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Optical detection of changes in glass surface properties induced during wet photolithography R. MASINA, National Science Foundation Center for Biophotonics Science and Technology, J. P. LANDRY, X. D. ZHU, Department of Physics, University of California at Davis, A. N. PARIKH, Department of Applied Science, University of California at Davis — Recently Yee et al. (Adv. Mater. 2004, **16**: 1184-1189) demonstrated a wet UV-photolithographic method for patterning phospholipid bilayers into two-dimensional arrays of voids and patches on hydrophilic glass surfaces. In this method, the glass surface is chemically etched to remove organic contaminants and expose hydrophilic groups before a bilayer is formed on top of it, using the method of small unilamellar phospholipid vesicle fusion. The bilayer is subsequently illuminated with short-wavelength UV light through a photomask, creating voids in the irradiated regions. We studied the effects of the chemical etching and subsequent UV irradiation on the surfaces of commercially available microscope glass slides using an oblique-incidence optical reflectivity difference (OI-RD) microscope. We found that the UV irradiation after chemical etching further changes the properties of the surface, even in the absence of a lipid bilayer. As a result, irradiating the chemically etched surface before the UV-photolithography step prevents further UV-induced changes in surface properties. We found that the lipid bilayer formed on such an UV-irradiated surface retains its fluidic properties.

James Landry
Department of Physics, University of California at Davis

Date submitted: 30 Nov 2004 Electronic form version 1.4