Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Modifying Surfaces with Light.** JEFF KOBERSTEIN, Columbia University, GREG CARROL, FENG PAN, PENG WANG, NICHOLAS TURRO — The ability to locate particular functional groups at surfaces is an enabling aspect of many important technologies. Unfortunately, high energy functional groups are not thermodynamically stable at the surface of polymers and other low surface tension materials. We show that this difficulty can be overcome through the synthesis of surface active block copolymers and self-assembled monolayers that contain photoactive functional groups. Photoactive functional groups are protected during the synthesis step, but can be deprotected upon exposure to light. To accomplish this task we borrow from photoresist technology and employ photoacid generators to deprotect carboxylic acid groups delivered to a surface upon exposure to light. Since all modifications are accomplished with light, direct micropatterning of surface functional groups is possible simply by exposure through a mask. The technique is thus a simple, direct alternative to other patterning techniques such as stamping. We also demonstrate that polymers and carbohydrates can be photografted to a surface using photoactive groups that are capable of hydrogen abstraction. Applications that are demonstrated include prevention of thin film dewetting, general surface functionalization, micropatterning of functional groups, polymers and biopolymers, and the creation of the first covalently bound carbohydrate microarrays. This work is funded by grants from the Polymer Program of the National Science Foundation Division of Materials Research and the U.S. Army Research Office.

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Date submitted: 28 Nov 2005 Electronic form version 1.4