

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Surfactant Activated Dip-Pen Nanolithography C. PATRICK COLLIER, California Institute of Technology — Direct nanoscale patterning of maleimide-linked biotin on mercaptosilane-functionalized glass substrates using dip-pen nanolithography (DPN) is facilitated by the addition of a small amount of the biocompatible nonionic surfactant Tween-20. A correlation was found between activated ink transfer from the AFM tip when surfactant was included in the ink and an increase in the wettability of the partially hydrophobic silanized substrate. Surfactant concentration represents a new control variable for DPN that complements relative humidity, tip-substrate contact force, scan speed, and temperature. Using surfactants systematically as ink additives expands the possible ink-substrate combinations that can be used for patterning biotin and other molecules. For example, we are currently exploring the possibility of developing nickel/nitrilotriacetic acid (NTA)-maleimide based inks that will bind to mercaptosilanized glass surfaces for the reversible immobilization of biomolecules containing polyhistidine tags.

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Date submitted: 01 Dec 2004

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