

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Nanolithographic Write, Read and Erase via Reversible Nanotemplated Nanostructure Electrodeposition on Alkanethiol Modified Au(111) in an Aqueous Solution¹ KYOUNGJA SEO, ERIC BORGUET, Temple University — A Write, Read and Erase nanolithographic method, combining *in-situ* electrodeposition of metal nanostructures with atomic force microscopy (AFM) nanoshaving of a 1-hexadecanethiol (HDT) self-assembled monolayer (SAM) on Au(111) in an aqueous solution, is reported. The AFM tip defines the local positioning of nanotemplates via the irreversible removal HDT molecules. Nanotemplates with lateral dimensions as narrow as 25 nm are created. The electroactive nanotemplates determine the size, shape and position of the metal nanostructures. The potential applied to the substrate controls the amount of metal deposited and the kinetics of deposition. Metal nanostructures can be reversibly and repeatedly electrodeposited and stripped out of the nanotemplates by applying appropriate potentials.

¹This work was supported by the NSF (CHE 0456965). K.S. acknowledges the support of the Post-doctoral Fellowship Program of the Korea Science & Engineering Foundation (KOSEF)

Kyoungja Seo
Temple University

Date submitted: 07 Dec 2005

Electronic form version 1.4