

NANO HOUR

Wednesday, March 12, 2008

3:00 PM

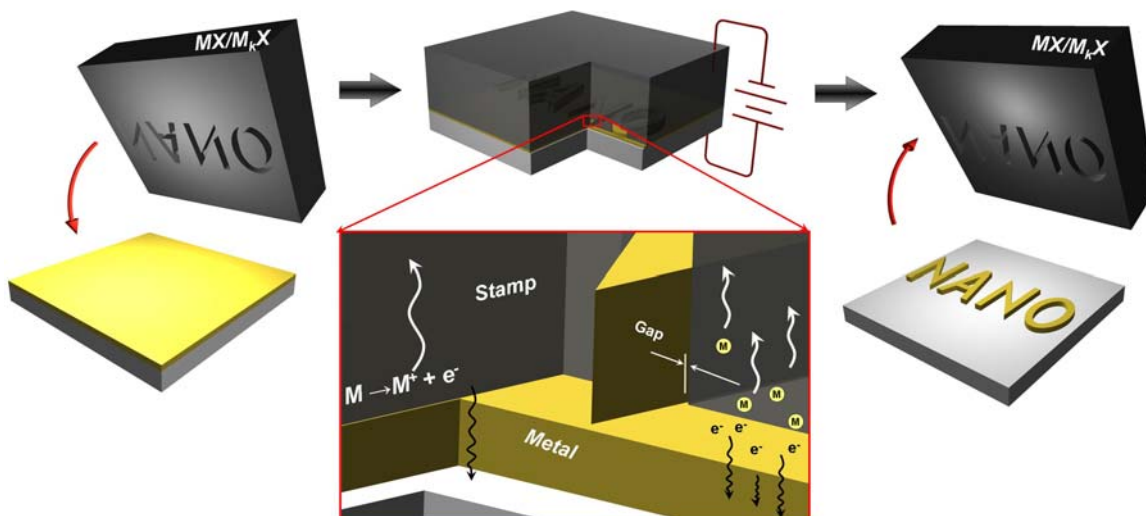
Beckman Institute - Room 3269

Electrochemical Nanoimprinting of Functional Silver Features with Solid-State Superionic Stamping

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Metallic nanostructures are the essential components of a large number of high-performance electronic devices, plasmonic devices, as well as physical and chemical sensors. Fabrication of nano-scale metallic features with controlled geometry has so far relied on lithographic processes that are typically complex and lack flexibility. A new approach to directly patterning metal at nano-scale with excellent dimensional resolution and flexibility is introduced for fabrication of functional nano-structures. This technique is based on the solid-state electrochemical dissolution of a metallic substrate at its contact with a pre-patterned surface of a solid electrolyte tool, and the subsequent formation of the complimentary pattern on the metal substrate as the solid electrolyte etches through the metal layer. Our results demonstrate repeatable and high-fidelity patterning of metal structures with a wide dimension range (millimeters to 20 nm). As this process is carried out in the ambient environment and does not require wet chemicals, its potential for use as a simple and yet high-throughput metal patterning technique offers a highly competitive alternative approach to fabricating functional structures and devices.



Coffee and cookies will be served.

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