Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Nanostructured electron beam deposited resonator combined with nanoparticles for mechanical single-electron transport HYUN KIM, HUA QIN, ROBERT BLICK, Laboratory for Molecular Scale Engineering, Electrical and Computer Engineering, University of Wisconsin-Madison — We present an integrated approach to build nano- electromechanical systems for single electron transport devices. By combining electron beam lithography with nanoparticles and direct three-dimensional electron-beam induced carbon growth, we have developed a scheme for fabricating an electromechanical single-electron transistor (emSET) for ultra-high frequencies. This process commands a size reduction of the metallic island and an improvement of the mechanical forces involved. We demonstrate how to combine two fabrication techniques for the realization of NEMS-SET devices. This will finally leads to Coulomb blockade effects and mechanical resonances in the GHz range.

Hyun Kim
Laboratory for Molecular Scale Engineering
Electrical and Computer Engineering, University of Wisconsin-Madison

Date submitted: 03 Dec 2004 Electronic form version 1.4