Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Photo-Induced Nanowire Formation on Polarity Patterned Ferroelectric Domains – Wavelength Dependence YANG SUN, ROBERT NEMANICH, Arizona State University — This research is focused on the bottom-up growth of nanostructures on periodically polled (congruent) lithium niobate. The formation of silver nanowires has been reported through a photo-induced reaction of UV exposed lithium niobate immersed in an aqueous silver nitrate solution. The metallic wires assemble predominantly at the domain walls of the periodically polled lithium niobate. In this study the process has been studied with Hg lamp excitation using a set of wavelength filters. Depending on the wavelength, the process can exhibit deposition over the whole surface or predominantly at the domain boundaries as previously described. The research has been extended to explore the photo-induced deposition of copper using an aqueous copper sulfate solution The process of copper wire formation on lithium niobate is occasionally observed, which suggests a dependence on surface preparation. When the thickness of the solution layer is reduced and the intensity of the UV light is increased, the lithium niobate surface is essentially uniformly covered with nanosized dots.

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Date submitted: 27 Nov 2007 Electronic form version 1.4