Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Characterization of Colloidal Silicon Nanoparticle Films GREGORY HERMAN, Oregon State University, DAVID NEIMAN, NeimAnalytical Services, Inc., STEPHEN GOLLEDGE, University of Oregon — Colloidal nanoparticle materials are under consideration for advanced manufacturing methods for inorganic photovoltaic systems. Silicon nanoparticles are a leading candidate for this application; however the propensity for silicon to form a native oxide prevents the efficient transport of electronic charge through the nanoparticle network. We have used x-ray photoelectron spectroscopy and secondary ion mass spectroscopy to evaluate the effect of various surface treatments and thermal processing on the oxidation of the nanoparticles and have correlated these with electrical measurements. We have found that HF treatments are most effective at removing the oxide and assist the formation of an interconnected nanoparticle network.

Gregory Herman
Oregon State University

Date submitted: 20 Nov 2009 Electronic form version 1.4