Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Interplay of film thickness and laser fluence in laser-crystallized silicon films MATTHEW R. SEMLER, JUSTIN M. HOEY, SRINIVASAN GURUVENKET, CODY R. GETTE, ORVEN F. SWENSON, ERIK K. HOBBIE, NDSU — A detailed study of the laser crystallization of amorphous silicon thin films as a function of laser fluence and film thickness will be presented. Silicon films grown through plasma-enhanced chemical vapor deposition were crystallized with a pulsed, neodymium-doped vanadate laser, operating at 355 nm. The crystallinity, morphology, and optical and electronic properties of the films are characterized through transmission and reflectance spectroscopy, resistivity measurements, Raman spectroscopy, X-ray diffraction, atomic force microscopy, and optical and scanning-electron microscopy. The films reveal a unique surface morphology that strongly couples to the electronic characteristics of the films, with a minimum laser fluence at which the film properties are optimized.

Erik K. Hobbie
NDSU

Date submitted: 13 Nov 2014 Electronic form version 1.4