Abstract Submitted
for the TSF07 Meeting of
The American Physical Society

Preliminary results of porous silicon synthesis by a non-contact method[1] KRISTIN PETERSON, TONI SAUNCY, Angelo State University, TIM DALLAS, MARK GRIMSON, Texas Tech University — The goal of this work is to produce porous silicon (p-Si) thin films on n-type and p-type crystalline Si substrates with various dopant types by using a light-induced hydrofluoric acid (HF) synthesis technique. The samples were treated using an expanded beam of a He-Ne laser to produce a localized electric field on bulk crystalline silicon while the samples were immersed in hydro-fluoric acid for varying amounts of time. Samples are now being analyzed by photoluminescence spectroscopy to determine if there is visible light emission, which is characteristic of p-Si. In addition, pore size was estimated by examining SEM micrographs, which indicate pore wall thicknesses on the order of one micron, with a typical pore size of two microns or less. The physical structure and size of the porous regions were found to vary with the concentration and dopant type of the crystalline Si wafer. In contrast to previous published reports, only the side of the sample illuminated with the He-Ne beam during HF synthesis was found to produce the porous thin film.

[1]This work supported by National Science Foundation grant no. EEC 0648761

Toni Sauncy
Angelo State University

Date submitted: 25 Sep 2007 Electronic form version 1.4