

Abstract Submitted
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Use of a non-contact synthesis method in selective area porous silicon thin film formation¹ DANIEL TAYLOR, TONI SAUNCY, Angelo State University Department of Physics — Porous silicon (p-Si) is a unique form crystalline silicon (c-Si), composed of a matrix of thin-walled c-Si surrounding numerous voids. Interest in the study of this structure was initially spurred by the observation of visible luminescence the well-known indirect band gap material. For pore formation, we utilized stain etching, a non-contact method of synthesizing p-Si. A 20-mW He-Ne (632.8nm) laser is used to produce a local electric field on the c-Si surface while the sample is immersed in hydrofluoric acid; this laser generated field is in lieu of the traditional applied voltage used in the standard contact technique. Our objective with this study was to investigate the efficacy of beam manipulation to produce selective patterned regions of p-Si thin film on the crystalline surface. Variation in patterning techniques, processing time and dopant type, along with optical and electrical characterization of the processed samples will be discussed.

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