

Abstract Submitted
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Photochemical synthesis of porous silicon thin films¹ OLIVIA SKEEN, TONI SAUNCY, Angelo State University — Porous silicon thin films were produced by photochemical synthesis with a solution of hydrofluoric acid (HF) and the oxidizer cobalt nitrate ($\text{Co}[\text{NO}_3]_2$). An 11mW HeNe laser was used during synthesis to produce the local electric field necessary for the formation of the porous matrix on the surface of the crystalline silicon substrate. Substrates used were n-type (Antimony), and p-type (Boron). Samples prepared with variations in process time from 15 minutes to 5 hours were examined using photoluminescence, SEM and Raman spectroscopy. Results indicate that the presence of the oxidizer during synthesis enhances the intensity and persistence of p-Si photoluminescence when compared with samples prepared using only HF. In addition, post process analysis reveals that the porous layer on the samples is present only on samples processed for less than 4 hours.

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