

Abstract Submitted
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The formation of silicon nanoparticles at atmospheric pressure by rapid thermal anneal¹ JUSTIN FRASIER, JONATHAN PREISS, BENEDICT ANYAMESEM-MENSAH, ANUP BANDYOPADHYAY, GREGORY SPENCER, Texas State University — In this study, the formation of silicon nanoparticles by thermal annealing of an initial silicon-on-insulator (SOI) structure is being performed. The SOI samples are synthesized by thermal oxidation of Si (100) wafers followed by magnetron or ion beam sputtering of a thin Si top layer. The thermal anneals are performed in a rapid thermal anneal system at temperatures ranging from 600°C to 900°C under atmospheric pressure of flowing Ar gas. The nanoparticle formation process is being studied as a function of the thermal anneal temperature, anneal time, and Si layer thickness. The annealed samples are measured by atomic force microscopy to determine the resulting nanoparticle size distributions and synthesis details. Electron microscopy is also being used for analysis. Results for these synthesis experiments and comparisons with other methods will be presented.

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