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Study of Nanopore Sculpting with Noble Gas Ion Beams at Various Energies BRADLEY LEDDEN, ERIC KRUEGER, JIALI LI, University of Arkansas — We report on experiments using noble gas beams: Helium, Neon, Argon, Krypton, and Xenon, at energies of 1keV, 3keV, and 5keV to controllably fabricate nanopores in freestanding silicon nitride membranes. Utilizing computer simulations (SRIM and TRIM), and a surface adatom diffusion model to describe the phenomenon of nanopore formation, we evaluate the conditions, specifically the ion energy, responsible for highly controllable fabrication of solid state nanopores. Additionally, we present methods to determine the thickness of the grown film as well as the thickness profile of the nanopore.

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