Formation of directed self-assembled Ge/Si quantum dots\textsuperscript{1}

DONGYUE YANG, JEREMY LEVY, University of Pittsburgh, JERROLD FLORO, CHRIS PETZ, University of Virginia — Directed self assembly of sub-10-nm Ge islands are candidates for producing laterally coupled quantum dot molecules with geometrically defined spin exchange couplings. We describe low-temperature magnetotransport measurements on small arrays of Ge islands grown on semi-insulating silicon substrates. The islands are created by a technique for precise nucleation of Ge islands using nanoscale SiC templates defined by direct-write electron-beam lithography.\textsuperscript{2} Ge island arrays are coupled through ohmic contacts to the Si capping layer, and geometries are defined that are suitable for either vertical or lateral transport.

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