Abstract Submitted
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Patterning of GaAs and Si substrates using self-organized Al_2O_3 templates and epitaxial growth of GaAs nanostructures ARCHANA KUMARI, JOHN HATCH, JAESUK KWON, XIN ZHANG, EVERETT FRASER[1], CHAE HYUN KIM, HAO ZENG, HONG LUO, University at Buffalo, The State University of New York — Reactive ion etching is used with Al_2O_3 templates to pattern SiO_2 films deposited on GaAs and Si substrates. The technique allows nanopatterning of substrates without photo or e-beam lithography. The SiO_2 film pattern consists of holes of about 80 nm diameter with a pitch of about 100 nm. GaAs nanostructures are grown on the patterned substrates by molecular beam epitaxy. The observed arrays of nanostructures closely follow the patterns on SiO_2. Several types of structures are observed depending on the growth conditions, including pillars with flat hexagonal tops and pyramidal triangular tops. Characterization of the structures will be discussed. This work was supported by NSF DMR1006286.

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