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Fabrication of Variable-Height Nanostructures via Dynamic Stencil Deposition JEFFREY WASSERMAN, KRISTIN LUCAS, SOO HYUNG LEE, CAITLIN CROWL, ANTHONY ASHTON, NINA MARKOVIC, Johns Hopkins University — Shadow masks of thin low-stress silicon nitride membranes with nanopore punctures allow for direct deposition of material with features as small as 10nm, without need for resists or other chemical exposure. We have built a device to translate the shadow mask with a nanopore relative to a substrate, allowing controllable nanoscale features to be ‘drawn’ directly onto the substrate. By modulating the speed of the shadow mask we can vary the height of the nanostructure as it is being deposited. This allows for direct fabrication of nanowires and quantum dots, as well as controllable granular nanostructures and parallel arrays of nanostructures, not feasible using other techniques. We present in this talk our method for implementing nanoscale dynamic stencil deposition, as well as a variety of nanostructures and other components we have fabricated and studied via this deposition technique.

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