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A Colloidal Lithography and Catalyzed Growth Approach to Semiconducting Nanowire Sensors JOSHUA M. CARLSON, Department of Physics, West Chester University, West Chester, PA 19383, KEVIN MACKFISHER, KURT W. KOLASINSKI, Department of Chemistry, West Chester University, West Chester, PA 19383, SHAWN H. PFEIL, Department of Physics, West Chester University, West Chester, PA 19383 — Semiconducting nanowires present an attractive candidate for biological sensors due to their large area to volume ratios, and corresponding large change in optical and electrical properties upon ligand binding. Here we present a fabrication scheme and preliminary data on the production of ordered arrays of nanowires, on substrates suitable for integration into optical devices, via a combination of colloidal lithography and catalyzed growth. Targeted materials include both oxides and sulfides of Co, Fe, Cu and Zn. This protocol has the advantage of creating nano-patterned devices without the need for e-beam or DUV lithography. Furthermore, by growing nanowires on optically distinguishable seeds, this protocol has the potential to allow the measurement of both the properties of individual nanowires and the ensemble.

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