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Dielectrophoretic control of semiconductor nanostructure growth and assembly ALEXANDER WISSNER-GROSS, Harvard University, Department of Physics, CHARLES LIEBER, Harvard University, Division of Engineering and Applied Sciences — The rational growth and assembly of one-dimensional semiconductor nanostructures may have significant applications to superlattice electronics and large scale integration. The electrostatics of doped semiconductor nanowires capped with metallic catalysts, under nonuniform electric fields and at elevated temperatures, are analyzed and the feasibility of dielectrophoretically-controlled growth is explored. For post- growth control, positive dielectrophoretic assembly of silicon nanowires into simple devices is experimentally demonstrated and the devices are characterized.

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