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High

critical-current superconductor-InAs nanowire-superconductor junctions SIMON ABAY, Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, 412 96 Göteborg, Sweden, HENRIK NILSSON, Division of Solid State Physics, Lund University, 221 00 Lund, Sweden, FAN WU, C.M. WILSON, Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, 412 96 Göteborg, Sweden, H.Q. XU, Division of Solid State Physics, Lund University, 221 00 Lund, Sweden, PER DELSING, Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, 412 96 Göteborg, Sweden — We report on InAs nanowires coupled to superconducting leads with high critical current and widely tunable conductance. We implemented a double lift-off nanofabrication method to get very short nanowire devices with Ohmic contacts. We observe very high critical currents of up to 800 nA in a wire with a diameter of 80 nm. The current-voltage characteristics of longer and suspended nanowires display either Coulomb blockade or supercurrent depending on a local gate voltage, combining different regimes of transport in a single device. In addition, both the conductance and the critical current of the suspended devices increased step-wise as a function of the local gate voltage.

> Simon Abay Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, 412 96 Göteborg, Sweden

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