

Abstract Submitted
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Anomalous transport property in the single-crystal Co nanowire with superconducting electrodes¹ JIAN WANG, NITESH KUMAR, MINGLIANG TIAN, QI ZHANG, JAINENDRA JAIN, THOMAS MALLOUK, MOSES H.W. CHAN, Center for Nanoscale Science, Penn State University — Transport measurements were made on individual single-crystal Co nanowire with four focused ion beam (FIB) deposited tungsten (W) electrodes, which are superconducting below 5 K. It was found that the 2 microns long Co nanowire shows a sharp and large resistance peak near the onset transition temperature (T_C) of W and a rapid resistance drop below T_C . The large, 50% resistance drop at low temperature suggests the proximity effect from superconducting W electrodes extends to a long fraction of the ferromagnetic Co nanowire. The resistance peak is not seen in the Au nanowire with same superconducting W electrodes. Measurements on a Co nanowire contacted with FIB deposited non-superconducting Pt electrodes show no change in resistance.

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