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Enhanced Tc in a High Temperature Superconductor, Proximate to an Antiferromagnetic Insulator S. PARK, C. N. ZHANG, S. GUHA, S.-W. CHEONG, Department of Physics and Astronomy, Rutgers University, NJ 08854 — Placing a high Tc superconductor physically close to an antiferromagnetic insulator brings fundamental scientific interests. Not only the non-superconducting component of the heterostructure plays the role of an artificially created barrier for a Josephson junction network, but also the heterostructure-interface may highlight the magnetic proximity effect or the strain-induced pressure effect on the superconductivity. Electrical transport and percolation behavior of a polycrystalline high Tc superconductor-antiferromagnetic insulator composite has been studied by resistivity, magnetic susceptibility, x-ray diffraction and the polarized optical microscopic experiment. We discovered that Tc can be significantly enhanced in a particular choice of an antiferromagnetic insulator.

Soonyong Park
Rutgers University

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