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Magnetic Flux Trapping Behavior Due to Oxygen Disorder in Y-Ba-Cu-O MELODIE NGUYEN, KURT VANDERVOORT, Physics Department, California State Polytechnic University, Pomona, CA 91768 — A series of experiments were conducted on Y-Ba-Cu-O single crystals prepared in a variety of oxygen deficient and oxygen disordered states, with transition temperatures that ranged from 20 K to 85 K. Both oxygen deficiency and oxygen disorder along the chain sites strongly affect the superconducting properties. Field cooled and zero-field cooled magnetic transitions were measured using a low-field SQUID magnetometer to ascertain the amount of trapped magnetic flux as a function of the relative degree of oxygen disorder. For all samples measured, the percentage of trapped flux decreased with increased ordering of oxygen. These trends were enhanced for samples with greater oxygen deficiency. The ultimate goal of this project is to link these macroscopic magnetic properties to microscopic surface electronic properties, analyzed through scanning tunneling spectroscopy. Acknowledgment is made to the Donors of the American Chemical Society Petroleum Research Fund for support of this research.

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