

Abstract Submitted
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Weak flux pinning in the phase separated $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4+y}$ system¹ HASHINI MOHOTTALA, University of Hartford, BARRETT O. WELLS, JOSEPH I. BUDNICK, WILLIAM A. HINES, University of Connecticut — We have studied the magnetic characteristics of a series of super-oxygenated $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4+y}$ samples. According to our previous studies, these samples spontaneously phase separate to give an oxygen rich superconducting phase with a T_C near 40 K and an oxygen poor magnetic phase that also orders near 40 K.² All our samples showed a large reversibility in magnetization at different temperatures. Although the internal magnetic regions were expected to behave as pinning sites, our present study shows that they do not favor flux pinning. In terms of the matching principle between the defect and the coherence length, the regions that are larger than the coherence length cannot act as flux pinning centers. Thus our results imply that the magnetic regions are too large to act as pinning centers. Overall less flux pinning in the oxygen rich system also suggests that the separate superconducting regions in the system are more homogeneous.

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²Mohottala et al Nature Mat. 5, 377 pg. 377 (2006)

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