

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

In-plane resistivity and Hall effect data of $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ in high magnetic fields SCOTT RIGGS, NHMFL / FSU, FEDOR BALAKIREV, ALBERT MIGLIORI, JON BETTS, NHMFL / LANL, GREG BOEBINGER, NHMFL / FSU, GENNA LOGVENOV, TONY BOLLINGER, IVAN BOZOVIC, BNL, NHMFL / BNL COLLABORATION — The effects of stoichiometry (Sr concentration in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ - LSCO) are of extreme interest in exploring the phase space of high-temperature superconductivity (HTS). Carrier doping in LSCO is determined by the Sr concentration rather than non-stoichiometric oxygen, thus controlling the carrier concentration in LSCO tends to be easier than in the other HTS cuprates. Nevertheless, precise control of Sr at a precision greater than 0.005 is extremely difficult using existing single crystal growth techniques. We use our unique MBE growth chamber to grow combinatorial thin films of LSCO with a uniform gradient of Sr concentration across a single substrate. Intense magnetic fields suppress superconductivity, revealing the underlying normal state to temperatures below 0.3K. We report the Hall effect and resistivity with an extremely fine $\sim x=0.0002$ Sr resolution in fields up to 60T.

Scott Riggs
NHMFL / FSU

Date submitted: 20 Nov 2006

Electronic form version 1.4