Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Superconducting and transport properties of $Y_3Ba_5Cu_8O_X$ and $Y_3Ca_2Ba_5Cu_8O_x$ prepared by sol-gel method ALI ER, Old Dominion University, YUKSEL UFUKTEPE, AHMET EKICIBIL, Cukurova University, ALI OSMAN AYAS, Adiyaman University, SELDA KILIC CETIN, KERIM KIYMAC, Cukurova University — The influence of substitution of Ca has been studied using electrical resistivity (ρ), X-ray diffraction (XRD), atomic force microscopy (AFM), energy dispersive analysis (EDX), differential thermal analysis (DTA), thermogravimetric analysis (TGA), Hall coefficient (R_H), Hall mobility (μ_H) and magnetoresistance measurements. The XRD spectra showed that they almost have the same crystal structure of $Y_3Ca_2Ba_5Cu_8O_x$ as $Y_3Ba_5Cu_8O_x$with some impurities peaks. The resistivity measurements were made by the four-probe method. The $Y_3Ba_5Cu_8O_x$ and $Y_3Ca_2Ba_5Cu_8O_x$ have the highest T_c-onset at about 92.7 and 86.6 K, respectively. The Hall coefficient R_H and Hall mobility μ_H are measurement between 10-300 K temperatures at magnetic field of 0.55 T. The sign of R_H and μ_H are positive for two samples which indicate that the conduction is p-type for the samples. A small change of normal state resistivity and superconducting transition are observed in the resistivity curve with the magnetic field.

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Date submitted: 29 Nov 2010 Electronic form version 1.4