Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Fabrication and Characterization of $PrBa_2[Cu_xM_{1-x}]_3O_7$ (M=Ga, Al ,x=0.2) Epitaxial Thin Films HOM KANDEL, Applied Science Department, University of Arkansas at Little Rock, Little Rock, AR, 72204, USA, TARPIN CHEN, HYE-WON SEO, Physics Department, University of Arkansas at Little Rock, MILKO ILIEV, Texas Center for Superconductivity, University of Houston, Houston, TX, 77204, PARITOSH WADEKAR, Physics Department, National Sun Yat-sen University, Kaohsiung, 80424, Taiwan , JING-BIAO CUI, Physics Department, University of Arkansas at Little Rock, QUARK CHEN, Physics Department, National Sun Yat-sen University, Kaohsiung, 80424, Taiwan , FUMIYA WATANABE, Nanotechnology Center, University of Arkansas at Little Rock — We have fabricated epitaxial thin films of highly resistive material $PrBa_2(Cu_{1-x}M_x)_3O_7$ (M=Al, Ga, x = 0.2) by substituting Cu with Ga and Al in $PrBa_2Cu_3O_7$.The electrical resistivity in these materials are many orders higher than in $PrBa_2Cu_3O_7$ at 77K, which will provide an effective potential barrier to $YBa_2Cu_3O_7$ in high T_c S-I-S Josephson junction. X-ray diffraction, atomic force microscopy, Raman and temperature dependent resistivity measurements were performed to characterize the thin films. We will discuss the results of Raman spectroscopy with regard to the site detection of incorporated dopants in $PrBa_2(Cu_{1-x}M_x)_3O_7$ and transport studies with regard to the mechanism of hopping conductivity.

Hom Kandel
Applied Science Department, University of Arkansas at Little Rock,
Little Rock, AR, 72204, USA

Date submitted: 08 Dec 2009 Electronic form version 1.4