

Abstract Submitted
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Charge redistribution phenomena at the interfaces of the HTS, insulating and metallic oxides¹ VLADIMIR BUTKO, GENNADY LOGVENOV, Brookhaven National Laboratory, Condensed Matter Physics and Materials Sciences Department, DAVID REAGOR, Los Alamos National Laboratory, IVAN BOZOVIC, Brookhaven National Laboratory, Condensed Matter Physics and Materials Sciences Department — Interface and low dimensional phenomena are currently a focus of the active and broad scientific investigations. We have fabricated atomically sharp interface structures of the $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$, SrRuO_3 , SrTiO_3 and LaSrAlO_4 by using the atomic layer by layer molecular beam epitaxy MBE, Rf-sputtering and Ion Beam Preferential Etching (IBPE). Based on our structural, transport and inductance studies we discussed possible mechanisms of the surface metallic state in the IBPE SrTiO_3 [1], and elevated superconducting temperature observed in the $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ bi-layers [2]. [1] Reagor D.W., Butko V.Y. Highly conductive nanolayers on strontium titanate produced by preferential ion beam etching. *Nature Materials* 4 (8): 593-596 Aug., 2005. [2] Bozovic I, Logvenov G, Belca I, et al. Epitaxial strain and superconductivity in $\text{La}_{2-x}\text{Sr}_x\text{CO}_4$ thin films. *Physical Review Letters* 89 (10) Art. 107001, Sep.2, 2002.

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