

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Surface structural reconstruction of SrVO<sub>3</sub> thin films on SrTiO<sub>3</sub> (001)**<sup>1</sup> GAOMIN WANG, MOHAMMAD SAGHAYEZHIAN, LINA CHEN, HANGWEN GUO, JIANDI ZHANG, Louisiana State University — Paramagnetic metallic oxide SrVO<sub>3</sub> (SVO) is an itinerant system known to undergo thickness-induced metal-insulator-transition (MIT) in ultrathin film form, which makes it a prototype system for the study of the mechanism behind metal-insulator-transition like structure distortion, electron correlations and disorder-induced localization. We have grown SrVO<sub>3</sub> thin film with atomically flat surface through the layer-by-layer deposition by laser Molecular Beam Epitaxy (laser-MBE) on SrTiO<sub>3</sub> (001) surface. Low Energy Electron Diffraction (LEED) measurements reveal that there is a ( $\sqrt{2}\times\sqrt{2}$ ) R45 surface reconstruction independent of film thickness. By using LEED-I(V) structure refinement, we determine the surface structure. In combination with X-ray Photoelectron Spectroscopy (XPS) and Scanning Tunneling Microscopy (STM), we discuss the implication on the MIT in ultrathin films below 2-3 unit cell thickness.

<sup>1</sup>This work is supported by the National Science Foundation under the NSF EP-SCoR Cooperative Agreement No. EPS-1003897 with additional support from the Louisiana Board of Regents

Gaomin Wang  
Louisiana State University

Date submitted: 06 Nov 2015

Electronic form version 1.4