東京大学
微細構造解析
プラットフォーム
The University of Tokyo

東京大学微細構造解析
プラットフォーム公開講演会

“Surface and interface composition in LAO/STO hetero-interface”

Prof. Alp Sehirlioglu
School of Engineering
Case Western Reserve University

$LaAlO_3/SrTiO_3$ (LAO/STO) hetero-interfaces are of-interest due to observation of unexpected phenomena at the interface including tunable 2D conductivity, superconductivity and magnetic scattering. A great number of physical and chemical factors have been hypothesized to create these unique observations at the interface such as electronic reconstruction, intermixing, non-stoichiometry and strain; however neither is necessarily exclusive of each other. Therefore, quantification of all parameters is crucial to understand the extent each factor contributes to both the presence/absence and the magnitude of the 2D conductivity. Presented here is how the local chemistry at the interface affects the local strain and how the surface chemistry can play a role on the electrical conductivity at the interface. In addition, anisotropy of electrical behavior related to domain structure will be introduced. The techniques include medium energy ion spectroscopy (MEIS) and X-ray Photoelectron Spectroscopy (XPS). The intermixing of both the A- and B-site cations have been quantified and related to in-plane strain with atomic resolution. The surface adsorbed species have been identified, quantified and was related to electrical properties. The results show both the need for quantification of parameters and the complex nature of these interfaces.

November 19 (Thu), 2015 15:30～17:00
Main meeting room at Institute of Engineering Innovation, UT
(工学部総合研究機構　9 号館 1 階　大会議室)
Organizer: Prof. Naoya Shibata and Prof. Yuichi Ikuhara