

APPLICATION OF ION BEAMS FOR THIN FILM TECHNOLOGY, Dae Won Moon, Surface Analysis Laboratory, Korea Research Institute of Standards and Science, Daeduck Science Town P.O.3, Daejeon, Korea 305-606.

Energetic ion beams of energy ranges from 10 eV to MeV have been widely used in thin film technology not only to grow thin films but also to analyze and modify thin films. Typical examples include sputter deposition, ion beam assisted deposition, sputter and scattering based surface and interface analysis techniques (SIMS, ISS, AES and XPS depth profiling, and RBS etc.), ion milling, and surface modification.

In most of thin film applications, Ar⁺ ions have been used. In this presentation, some of our outcoming results about how O₂⁺ ions can be utilized for ion beam oxidation, sputter depth profiling, ion beam milling, and ion beam sputter deposition. Rather than detailed description of results, emphasis on the significance of oxygen ion beam with various energies and incidence angles will be given with several cases such as ion beam oxidation of Si and GaAs, XPS sputter depth profiling of Ta₂O₅/Si without preferential sputtering, SIMS depth profiling of Ni/Cr multilayers, ion beam milling of SrTiO₃, and ion beam sputter deposition of YBCO superconductor thin films.

Other activities of ion beam technologies relevant to thin film in this laboratory will be briefly introduced for cooperations between Mexico and Korea as well as within Korea in the near future.