T_CSUH Bi-Weekly Brown Bag Seminar

Texas Center for Superconductivity at the University of Houston

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"Interface — A Key Role to Functional Thin Film Epitaxy"

Friday, March 3, 2006
Room 102, University of Houston Science Center
12:00 Noon – 1:00 p.m.

Abstract

Driven in parallel by technological needs and basic sciences and engineering's inquisitiveness, there has been an explosion in the development of new materials over the last decades, especially in the nanoscale regime. Interface, an unforgettable topic, has attracted more and more attention in the functional materials research and active device fabrication. It plays a key role in controlling the physical properties of advanced materials and result in the discovery of various new phenomena with an excellent opportunity for developing new materials for active nanostructures and their engineered nanosystems. We have focused on the systematic investigation of interface effects on highly epitaxial functional oxide thin films and have achieved many excellent results. For instance, we have achieved an extremely high dielectric tenability of 80% from highly epitaxial ferroelectric Mn:$(Ba,Sr)TiO_3$ thin films, strong anisotropic phenomena in highly epitaxial $(Pb,Sr)TiO_3$, a new record of giant magnetoresistance ratio of 10^{10} from artificial domain structural epitaxial $(La,Ca)MnO_3$ thin films, the interface-controlled oxide nanorod/ribbon highly epitaxial thin films, and many other results. A series of models were developed to understand these interface phenomena. Details will be presented in the talk.

Bio

Dr. C. L. Chen is currently an associate professor of physics at the Department of Physics and Astronomy in the University of Texas at San Antonio and an adjunct professor at the Texas Center for Superconductivity at the University of Houston. He received his Ph. D. degree in solid state science from the Pennsylvania State University in 1994. He was the Director's Funded Post-doctoral Fellow in the Los Alamos National Laboratory before he became a research assistant professor at TcSUH in June 1996. His research interests have spanned over the areas of multifunctional oxide thin film epitaxy, nanostructure fabrication, surface and interface physics and chemistry, and modeling developments. He has authored or coauthored about 100 refereed papers that have appeared in *Nature*, *Physical Review Letters*, *Applied Physics Letters*, and others, and has delivered about 100 invited talks/lectures at international/national conferences (MRS, ACerS, IMRUS, etc.) and universities. Also, he has served as chair or co-chair in several international and national symposiums such as the American Ceramics Society, Materials Science and Engineering, and others.

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