Fatigue Behavior of Heterostructured Pb(Zr,Ti)O$_3$/(Bi,Nd)$_4$Ti$_3$O$_{12}$ Ferroelectric Thin Films

by Ms. Sim Chow Hong

Date: 25th August 2006 (Friday)
Time: 12:30 to 1:00 pm
Venue: LT 3

Abstract

Heterolayered Pb(Zr$_{0.52}$Ti$_{0.48}$)O$_3$/(Bi$_{3.15}$Nd$_{0.85}$)Ti$_3$O$_{12}$ (PZT/BNT) thin films were synthesized via a route of combining sol-gel and rf-sputtering. A fatigue anomaly is observed for the heterolayered PZT/BNT thin films, whereby a switchable polarization peak, which is more than 5 times higher than that of the virgin state, occurs upon polarization switching for $10^8$-$10^9$ cycles. Interestingly it shifts towards smaller numbers of switching cycles at elevated temperatures. Both the aging and dielectric behavior suggests that the fatigue anomaly is related to the defects accumulated at the interfaces in the heterolayers.

Ms Sim Chow Hong Speaker

Sim Chow Hong received her Bachelor of Science Degree with Honors in Materials Science Department at National University of Singapore in 2004. She is currently pursuing her Masters degree in the Advanced Ceramic Lab under the supervision of A/P John Wang. Her thesis work concerns preparation and characterization of ferroelectric PZT and BNT thin films.

Dr Xue Jun Min Host

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