

**CENTER FOR NANOHYBRID
FUNCTIONAL MATERIALS**
and
**NEBRASKA CENTER FOR
MATERIALS AND
NANOSCIENCE**

**FRIDAY
AUGUST 17, 2012
3:00 – 5:00 PM
237 SEC**



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**A new multiferroic material of (Ga,Fe)2O3
doped with several divalent ions**

A long drive to unveil the nature of multiferroelectricity of (Ga,Fe)2O3 at room temperature is close to the final answer. Addition of Fe into Ga sites leads to an increase of the transition temperature of ferrimagnetism in the oxide but it is not clear to bring concurrent emergence of ferroelectricity at the same temperature regime. Large leakage current of the materials is likely a hinder to investigate the polarization current, which is converted to ferroelectric switching. A variety of metal ions have been attempted to tune the conducting behaviors of the Ga0.6Fe1.4O3 (GFO) thin films on SrRuO3 (SRO) bottom electrodes. Finally, Mg+2 and Co+2 seem to be mostly effective in reducing the leakage currents of the GFO films [Lefevre *et al.* Appl. Phys. Lett. **100**, 262904 (2012)]. A subsequent endeavor to demonstrate their ferroelectric switching reversal is under way. In addition, an intriguing interaction between GFO and SRO is also observed and is being proposed as a potential antiferromagnetic coupling therein.

Seminar hosted by Dr. Mathias Schubert, Department of Electrical Engineering



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