Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Orbital order, ferromagnetism, and ferroelectricity of $BiMnO_3$ and related compounds CHANHO YANG, TAEYEONG KOO, YOON HEE JEONG, Dept of Physics, POSTECH — Multiferroic materials, where ferroelectricity and magnetism coexist, have been actively studied. This class of materials would offer a large application potential for new devices taking advantage of two coupled degrees of freedom based on local off-centered distortion and electron spin. Although most often the magnetic state in coexistence with ferroelectricity is antiferromagnetic, $BiMnO_3$ is an interesting exception with the simultaneous existence of ferromagnetism and ferroelectricity. However, the transition temperatures are in great disparity with $T_{FE} = 770$ K and $T_{FM} = 105$ K, and consequently its ME coupling is not large. In this talk, we will report on three aspects of $BiMnO_3$: (1) Long range ordering of 3d-orbital of Mn^{3+} ions and its influence to the ferromagnetism and ferroelectricity (2) How to create a system to induce a large inter- property coupling by modifying $BiMnO_3$ (3) How to obtain a material with a large inter-coupling at room temperature

Yoon Hee JEONG
POSTECH

Date submitted: 30 Nov 2005 Electronic form version 1.4