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**Orbital order, ferromagnetism, and ferroelectricity of BiMnO<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub>: (1) Long range ordering of 3d-orbital of Mn<sup>3+</sup> 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<sub>3</sub> (3) How to obtain a material with a large inter-coupling at room temperature

Prefer Oral Session  
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