

2024 IBS-CALDES Seminar

- ✓ **Date & Time:** 3:00PM, May 13 (Mon), 2024
- ✓ **Venue:** IBS POSTECH Campus Bldg. 105
- ✓ **Zoom ID:** 535 132 0381 / PW: 322293 (1st talk will be given online)
- ✓ **Speaker & Title**

3:00PM~ Prof. Se-Young PARK (Soongsil University)

Flexoelectric polarizing and control of a ferroelectric metal phase of SrRuO₃ thin films

** Will be online at RM 105 and given in Korean only.*

4:10PM~ Prof. Sung-Hyon RHIM (University of Ulsan)

Brief overview on altermagnetism

** The talk will be at RM 105.*

Organized by: Dr. Jhinhwan LEE (jhinhwan@ibs.re.kr, 054-260-9014)

■ **3:00PM~**

(This talk will be given via Zoom at RM 105 and only in Korean)

Flexoelectric polarizing and control of a ferroelectric metal phase of SrRuO₃ thin films

Se-Young PARK

Department of Physics, Soongsil University

Electric polarization is well-defined only in insulators, not metals, and there is no general scheme to induce and control bulk polarity in metals. We circumvent this limitation by utilizing a pseudo-electric field generated by inhomogeneous lattice strain, namely a flexoelectric field, as a means of polarizing and controlling a metal. Using heteroepitaxy, atomic-scale imaging, and first-principles calculations, we show the existence of flexoelectric fields driven by the interfacial coupling between SrRuO₃ deposited on (111)-oriented SrTiO₃. Sheer and longitudinal strain gradients are generated by the change in the lattice vectors associated with a gradual change in the octahedral rotation pattern from a-a-a- around the interface to a-a-c₀ away from the interface. We find substantial changes in electronic and magnetic properties from enhanced electron correlation associated with the Ru off-center displacements, demonstrating the flexoelectric control of the electronic and magnetic properties.

■ 4:10PM~

Brief overview on altermagnetism

Sung-Hyon RHIM

Department of Physics & EHSRC, University of Ulsan

This talk aims a brief and short-handed overview on altermagnetism - a new magnetic phase recently proposed. The altermagnetism is mostly regarded as d-wave magnetism, as a counterpart of d-wave superconductivity. Hence, short-handed summary on d-wave superconductivity in terms of gap symmetry is provided. As symmetry arguments are unavoidable in discussing altermagnetism, operators consisting of groups, more specifically spage group and spin group, are introduced. As final remark, the comparison between antiferromagnetism and altermagnetism is outlined. This talk does not intend a complete understanding of alter magnetism but rather sketchy and intuitive understanding of altermagnetism.