



IBS Center for Molecular Spectroscopy and Dynamics

Seminar

■ **SPEAKER**

Prof. Seung-Hun Lee (University of Virginia)

■ **TITLE**

Role of Organic Molecules in Organic-Inorganic Solar Cell Perovskites

■ **ABSTRACT**

The record solar cell efficiency based on hybrid organic-inorganic perovskites (HOIPs) has reached 22.7% which rivals that of conventional silicon solar cells. Combined with its inexpensive solution based processing and all earth abundant compositions, HOIPs are among the most promising next generation solar cell materials. In this talk, I will present our group's studies, using elastic and inelastic neutron scattering and photoluminescence techniques, and density functional theory calculations, on HOIPs, to shed lights on the microscopic mechanism of the photovoltaic properties of the HOIPs.

Reference:

[1] D. Zhang et al., Temporally decoherence and spatially coherent vibrations in metal halide perovskites, *Physical Review B* 102 (22), 224310 (2021).

[2] T. Chen et al., Origin of long lifetime of band-edge charge carriers in organic-inorganic lead iodide perovskites, *Proceedings of National Academy of Science*, 114, 7519-7524, (2017).

[3] T. Chen et al., Entropy-driven structural transition and kinetic trapping in formamidinium lead iodide perovskite, *Science advances* 2 (10), e1601650 (2016).

[3] T. Chen et al., Rotational dynamics of organic cations in the CH₃NH₃PbI₃ perovskite, *Phys. Chem. Chem. Phys.*, 17, 31278-31286, (2015).

■ **DATE AND VENUE**

July 5, 2022 (Tuesday, 11:00 - 12:00)
Virtual Seminar (Seminar Room A (116))

■ **LANGUAGE**

Korean

■ **INVITED BY**

Prof. Tai Hyun Yoon