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Carbon Allotropes provide Solutions to Limitations of Thin-film Solar Cells

April 16 | Bldg. 101
Tuesday, 2 PM | Seminar Room on the 1st floor

Abstract: My research focuses on the applications of carbon allotropes to providing solution intrinsic problems of now emerging thin-film photovoltaics, namely silicon solar cells, organic solar cells, and perovskite solar cells. Their limited power conversion efficiency, stability, and stretchability can be improved by employing carbon allotropes which comprises of only carbon atoms. Carbon nanotube, graphene, and fullerene, exhibit various electronic properties depending on their structural configurations, ranging from conductors to semiconductors. Their earth-abundance and resilient nature means that they are perfect replacements for the conventional materials, which are finite and inflexible. In this talk, I will introduce mainly carbon nanotube and fullerene applications in organic and perovskite solar cells and how they are making an impact to the field of solar cells.

References:

- [1] 'Single-Walled Carbon Nanotubes in Emerging Thin-Film Solar Cells: Synthesis and Electrode Applications' *Adv. Energy Mater.* 201801312 **2018**.
- [2] 'Lithium-Ion Endohedral Fullerene (Li⁺@C₆₀) Dopants in Stable Perovskite Solar Cells Induce Instant Doping and Anti-Oxidation' *Angew. Chem. Int. Ed.* 57, 1 **2018**.
- [3] 'Single-Walled Carbon Nanotubes in Solar Cells' *Top. Curr. Chem.* 376, 4 **2018**.

Il Jeon read chemistry for both undergraduate and postgraduate at the University of Oxford, UK in 2008. Upon graduation, he worked in LG Display Co. Ltd., South Korea for 5 years as the youngest senior researcher, developing optical films, OLED, and quantum displays. In 2016, he received a Ph.D. degree in chemistry with honours at the University of Tokyo, Japan. Having worked as a JSPS postdoctoral fellow and an assistant professor, he is now a lecturer (senior assistant professor) at the same university. His research focuses on the development of low-dimensional materials and their optoelectronic applications.

You are cordially invited to attend!

Tuesday Colloquium