



Department of
Mechanical Engineering
The University of Hong Kong



SEMINAR

Aerosol-Synthesised Carbon Nanotubes as Electrodes in Thin-film Solar Cells

Date: 21 June, 2023 (Wednesday)
Time: 2:00 p.m.
Venue: Room 7-34, Haking Wong Building, HKU

Speaker: Professor Il Jeon
Department of Nano Engineering
SKKU Advanced Institute of NanoTechnology (SAINT)
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Abstract:

Addressing the escalating energy demand while mitigating environmental impact stands as a pressing challenge for our society. The urgency for pollution-free and infinitely renewable energy sources has taken center stage amidst global warming and escalating energy crisis. In this context, optoelectronics – the field that deals with light-electricity interactions – offers a promising pathway towards efficient energy usage and potentially renewable energy harvesting. This technology is broadly applicable, leveraging the ubiquitous and clean energy of light, similar to nature's utilization of solar energy for photosynthesis over billions of years.

Among various optoelectronic devices, thin-film devices have garnered substantial interest over the past decade, chiefly due to their high power conversion efficiencies and versatile applications. However, a significant roadblock in their widespread adoption is their reliance on inflexible and costly indium tin oxide (ITO) transparent electrodes and metal electrodes.

The advent of carbon nanotubes (CNTs) presents an exciting development in this regard. CNTs offer a prospective alternative to traditional ITO and metal electrodes in thin-film optoelectronic devices. Characterized by remarkable mechanical flexibility and entirely comprised of abundant carbon, CNTs have been at the forefront of ongoing research. The conductive films of CNTs in thin-film optoelectronic devices are expected to bring about noteworthy advancements, given the ongoing improvements at both synthetic and engineering levels.

In this presentation, I will provide an overview of the research progress on not only CNTs but also fullerenes and other biomaterials. Moreover, I will delve into the future directions of this research, setting the stage for the next wave of breakthroughs in optoelectronics.

Biography:

Prof Il Jeon read Chemistry for Bachelors and Masters degrees at Oxford University, UK. Upon graduation in 2008, he worked as the youngest senior researcher at LG Display Co. Ltd., South Korea for 5 years. In 2016, he received a Ph.D. degree in Chemistry with honours from the University of Tokyo, Japan. After working as a JSPS post-doctoral fellow, he worked as an assistant professor and a lecturer at the same university. Later, he joined Pusan National University as an associate professor followed by moving to the Department of Nano Engineering and SKKU Advanced Institute of NanoTechnology (SAINT) at Sungkyunkwan University (SKKU) where he is a Vice Provost for the International Affairs Division. His team are working on various nanomaterials such as nanocarbon and biomaterials for energy to sensor applications. Thus far, he has published more than 90 lead-authored SCI papers and registered 5 international & 15 domestic patents.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. D.M. Shin at 3917 8061.