

## Flexible and Transparent Optoelectronics based on Nanomaterials such as Carbon Nanotubes and Quantum Dots

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### ABSTRACT

This talk will focus on a new type of optoelectronics, which can be bent and transparent. These kinds of optoelectronics are considered as an emerging technology due to the potential applications including wearable, biocompatible and interactive devices. A method to synthesize highly-ordered arrays of single-walled carbon nanotubes will be introduced to fabricate high-performance and flexible electronics. The physics of Quantum-dots Light Emitting Diodes (QLEDs) will be considered as well as the fabrication process of the QLEDs. In addition, a method to fabricate flexible and transparent phototransistors, which can be perfectly turned on and off by photons, based on quantum-dots will be discussed in detail. Finally, the importance of the interfacial electronic structure will be considered to improve the devices based on nanomaterials. The measurements and analysis of the interfacial electronic structure of the optoelectronics will be introduced in detail.

### BIOGRAPHY

Seong Jun Kang received his B.S., M.S. and Ph.D. degrees in Physics from Yonsei University. In 2005, he joined in the Department of Materials Science and Engineering at University of Illinois at Urbana Champaign as a Postdoctoral Research Associate, where he was involved in research of flexible and stretchable electronic devices based on carbon nanomaterials. In 2007, he joined Korea Research Institute of Standards and Science as a research scientist. in the Center for Materials Measurements. From 2010, he joined to the Department of Advanced Materials Engineering for Information and Electronics at Kyung Hee University, where he has been an associate professor since 2014. His research interests focused on flexible and stretchable electronics based on nanomaterials, such as carbon nanotube, graphene and quantum-dots. Also, he focused on the study of interfacial electronic structures between nanomaterials for the high-performance optoelectronics. Additional information of Prof. Kang can be found at the webpage of <http://lant.khu.ac.kr>.



### EVENT DETAILS

**DATE:**

Wednesday,  
February 25, 2015

**TIME:**

11:00 AM

**LOCATION:**

Babbio 122  
Stevens Institute of Technology

**ATTENDANCE:**

Public