



## SEMINAIRE EXCEPTIONNEL

(de **11 h à 12 h**, amphithéâtre M001, PHELMA, Bât. INP, Minatec,  
ouvert à tous : enseignants, étudiants, chercheurs, administratifs, techniciens)

Lundi 22 mai 2017

“Quantum-dots optoelectronics for soft and transparent  
interactive devices”

by Prof. Seong Jun KANG

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**Abstract:** Quantum-dots optoelectronics are considered as an emerging technology due to the potential applications including wearable, biocompatible and human interactive devices. Therefore, two types of quantum-dots optoelectronics, including quantum-dots light emitting diodes (QLEDs) and quantum-dots photosensors, will be discussed in this talk. To introduce QLEDs, the physics of device will be considered as well as the fabrication and optimization processes. The interfacial electronic structure will be discussed to improve the device performance. For the quantum-dots photosensors, a hybrid structure of quantum-dots and oxide semiconductor will be presented. A controllable band-gap of quantum-dots in a wide band-gap oxide semiconductor enabled to absorb and generate photocurrent with a selective wavelength of light. The device characteristics and origin of the photocurrent will be discussed in detail to develop highly transparent visible/IR-light photosensors. Finally, this talk will suggest a new type of interactive device that used quantum-dots.

*Seong Jun Kang received his B.S., M.S. and Ph.D. degrees in Physics from Yonsei University in 1999, 2001 and 2005, respectively. In 2005, he joined in the Department of Materials Science and Engineering at University of Illinois at Urbana Champaign as a Postdoctoral Research Associate. For two years, 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. During this time, he was 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. He has been a founding member of the Young Korean Academy of Science and Technology since 2017. His research interests focused on flexible and stretchable electronics based on nanomaterials, such as 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>.*

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