



Invited Speaker

Towards functional high-yield molecular electronic devices

Takhee Lee

Department of Physics and Astronomy, Seoul National University, Korea

Email: tlee@snu.ac.kr

Abstract:

The idea of utilizing individual molecules as the electronic device components has generated a great attention in both understanding the basic transport physics and potential technological applications of molecular electronics [1]. But, fabrication of stable and reliable molecular junctions has been a long-standing challenge in molecular electronics. In this talk, I will review our group's research effort towards fabrication and characterization of high-yield large-scale molecular electronic junctions with device functionalities [2]. Specifically, I will present a series of our experimental advancements to achieve high yield and reliable molecular junctions, such as employing conducting polymer or graphene film as an intermediate electrode layer, or spin-coated reduced graphene oxide layer and directly transferred metals as a top electrode in molecular devices [2,3]. And I will explain the demonstration of molecular junctions with device functionalities such as rectifying, photoswitching, or gated operations [3].

References:

[1] Chem. Rev. 116, 4318 (2016), ACS Nano, 11, 6511 (2017), Adv. Mater. 23, 1583 (2011), Nature 462, 1039 (2009).

[2] Adv. Funct. Mater. 25, 5918 (2015), Adv. Mater. 23, 755 (2011), Nature Nanotech. 7, 438 (2012), ACS Appl. Mater. Inter. 9, 42043 (2017).

[3] Adv. Funct. Mater. 24, 2472 (2014), Adv. Mater. 26, 3968 (2014), ACS Nano, 12, 11229 (2018).