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**Semiconductor type dependent role of metal nanoparticle in metal and semiconductor nanostructured junction.**[1] SEUNG-HOON LEE, JAE-WON JANG[2], Department of Physics, Pukyong National University — Among hybrid nanostructures, semiconductor with metal nanomaterial has been more exploited because metal and semiconductor have different properties that, in combination, result in unique electrical and optical properties. Localized surface plasmon resonance (LSPR), which is one of novel properties of metal nanoparticles (NPs), has been used as a good strategy for increasing an opto-electric performance in semiconductors. In this presentation, improvement of the opto-electronic properties of non-single crystallized nanowire (NW) devices with space charges generated by LSPR is demonstrated. The photocurrent and spectral response of single polypyrrole (PPy) NW devices are increased by electrostatically attached Ag NPs. In particular, it is also proved the space charge generation by LSPR of Ag NPs by means of characterizing current-voltage (J-V) dependence and finite differential time domain (FDTD) simulation on the NW devices. Moreover, semiconductor type dependent role of metal NP in metal NPs decorated semiconductor NW is demonstrated by using light irradiated Kevin probe force microscopy.

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[2]Corresponding author

Seung-Hoon Lee
Department of Physics, Pukyong National University

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