Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Investigation of a new approach for high-yield molecular electronic junctions with direct metal transfer method[1] HYUNHAK JEONG, Seoul Natl Univ, HEEJUN JEONG, Hanyang Univ, TAKHEE LEE[2], Seoul Natl Univ — To investigate the charge transport characteristics through molecular junctions which utilize molecules as an active channel, several approaches to form molecular junctions have been demonstrated [1]. Specifically, solid state device structure-based methods have been considered, however, one of the major obstacles of this method is generation of filamentary path which results in low device yield. To overcome this, several other methods that utilize a protective interlayer have been reported [2,3]. But, it is still difficult to investigate the genuine transport characteristics through molecular junctions because of the adoption of the interlayers. Here, we propose a new approach for high-yield molecular junctions with a direct metal transfer method. With this method, we measured inelastic electron tunneling spectroscopy (IETS) characteristics of molecular junctions made with alkanethiolate. We also observed discrepancies and device-to-device variations in the IETS spectra, which are possibly originated from defects in the molecular junctions and insulating wall.

[1] Xiang et al. Adv. Mater. 25, 4845 (2013)
[2] Akkerman et al. Nature 441, 69 (2006)
[3] Wang et al. Adv. Mater. 23, 755 (2011)

[1]The National Creative Research Laboratory program (Grant No. 2012026372) through the National Research Foundation of Korea (NRF) funded by the Korean Ministry of Science, ICT & Future Planning.
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Date submitted: 10 Nov 2014 Electronic form version 1.4