

Abstract Submitted  
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**Electrical transport behavior of all - carbon nanotube - based three terminal junctions**<sup>1</sup> YUN-HI LEE, JE-MIN YOO, JONG-HEE LEE, Department of Physics, Korea University, Seoul, Korea, NDPL TEAM — In this study, we propose a process for suspended *in situ* lateral growth of all - carbon nanotube(CNT) based junction and report on the high current capacity of the CNT junction, especially, its current (I) response characteristics with and after UV. Furthermore, the analogy between current suppression and reversible switching of capacitor was studied by capacitance(C) spectroscopy. The designed diluted magnetic impurity doped oxide film was adopted as catalyst for the fabrication of all - CNT-based junction. 40 suspended junctions was tested and normally, one junction produced current of a few uA/1um at room temperature. The suspended CNT with the same electrode materials is expected to operate with ambipolarity. The nearly same low barrier height for the hole and electron conduction was estimated via I-T(K) measurements. Also, the surface of CNT was easily cleaned by low intensity UV treatment, resulting in a highly conductive channel that showed high current carrying behavior. Our result can be applied to develop a practical, accessible system for forming reproducible nanoelectronic junctions as well as to accelerate the realization of all low dimensional molecular devices.

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