

Abstract Submitted
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Textured Network Devices: Overcoming Fundamental Limitations of Nanotube/Nanowire Network-based devices¹ MINBAEK LEE, SEUNGHUN HONG, Department of Physics and Astronomy, Seoul Natl University, Seoul, Korea, MEG NOAH, YOUNG-KYUN KWON, Department of Physics and Applied Physics, University of Massachusetts, Lowell MA, USA, JUNE PARK, MAENG-JE SEONG, Department of Physics, Chung-Ang University, Seoul, Korea — Thin film devices based on single-walled carbon nanotube (swCNT) networks were extensively studied for various practical applications such as transistors, sensors, etc. However, those devices have been suffering various limitations such as poor on-off ratio due to metallic swCNTs in the networks, decreased mobility and conductance for devices with reduced linewidth due to the percolation problem, etc. Herein, we present a simple but efficient strategy to significantly improve the performance of swCNT network device by controlling the network structures. In this strategy, surface molecular patterns were utilized to prepare swCNT network-based devices with desired connectivity. We will discuss systematic study about the effect of swCNT network connectivity, as well as enhancements of on-off ratio, mobility and conductance of textured network-based transistors.

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Minbaek Lee
Department of Physics and Astronomy, Seoul National University

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