

Abstract Submitted
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Large-Scale Array of Pristine Carbon Nanotube Transistors¹ MIN-BAEK LEE, JIWOON IM, BYUNG YANG LEE, SUNG MYUNG, JUWAN KANG, SEUNGHUN HONG², School of Physics and Astronomy, Seoul National University, Seoul, Korea — 1D nanostructures such as carbon nanotubes (CNTs) have attracted tremendous attention due to their possible applications including transistors, chemical or biological sensor, etc. However, a lack of a massive manufacturing method for such devices has been an obstacle to their practical applications. Herein, we report a strategy for large scale assembly of CNT-based devices. In this strategy, inert molecular patterns were used to guide the adsorption of CNTs onto bare surfaces to form large scale integrated devices. Using this method, we demonstrated the wafer-scale fabrication of devices based on single-, double-, or multi-walled CNTs on virtually general substrates including SiO₂, Si, Al, Au, etc. Moreover, we also performed extensive analysis regarding the uniformity of fabricated CNT devices and the yield of this method. Importantly, since our method relies only on conventional semiconductor processing facilities, it is readily accessible for current semiconductor industry and should open up immediate applications such as sensors, FETs, and interconnectors.

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²Corresponding Author

Minbaek Lee
School of Physics and Astronomy, Seoul National University, Seoul, Korea

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