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Directed Self-Assembly of Gradient Concentric Carbon Nanotube Rings SUCK WON HONG, WONJE JEONG, Iowa State University, HYUNHYUB KO, VLADIMIR TSUKRUK, Georgia Institute of Technology, MICHAEL KESSLER, ZHIQUN LIN, Iowa State University — Hundreds of gradient concentric rings of linear conjugated polymer, (poly[2-methoxy-5-(2-ethylhexyloxy)-1,4- phenylenevinylene], i.e., MEH-PPV) with remarkable regularity over large areas were produced by controlled, repetitive "stick- slip" motions of the contact line in a confined geometry consisting of a sphere on a flat substrate (i.e., sphere-on-flat geometry). Subsequently, MEH-PPV rings exploited as template to direct the formation of gradient concentric rings of multiwalled carbon nanotubes (MWNTs) with controlled density. This method is simple, cost effective, and robust, combining two consecutive self-assembly processes, namely, evaporation-induced self- assembly of polymers in a sphere-on-flat geometry, followed by subsequent directed self-assembly of MWNTs on the polymer- templated surfaces.

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