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CVD grown SWCNTs on Si substrate from DPN patterned catalyst precursor.[1] IRMA KULJANISHVILI, RACHEL KOLTUN, SCOTT MAYLE, VENKAT CHANDRASEKHAR, Department of Physics & Astronomy, Northwestern University, DMITRIY DIKIN , Department of Mechanical Engineering, Northwestern University, SERGEY ROZHOK, NanoInk, Inc. — Much interest has been generated around patterning and synthesis of high quality single wall carbon nanotubes (SWCNTs) into desired architectures. Here we report our work, undertaken to elucidate a simple method for delivering catalyst nanoparticles on defined locations on Si substrate via direct writing approach. We applied the Dip Pen Nanolithography (DPN) approach to pattern catalyst nanoparticles in selective locations on the substrate and developed a successful recipe for the subsequent CVD growth to produce high quality SWCNTs into scalable array geometries. Key parameters for successful implementation of this technology into devices or circuit architectures will be discussed. We will present our results on patterning, synthesis and characterization of SWCNTs as-grown on the substrate. Raman spectroscopy analysis, electrical and thermal properties of individual SWCNTs prepared into complex nanodevices will be presented in progress.

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