

Abstract Submitted  
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**Thin Film Deposition/CNT Synthesis**<sup>1</sup> JEROME FREY, Southern Conn State Univ — Carbon nanotubes (CNTs) are a viable product for energy development due to its electrical conductivity property. One specific area of interest is CNTs in capacitors. Capacitors require a large number of uniformly grown CNTs. The objective of this project is to create a forest of uniformly, Vertically Aligned Carbon Nanotubes (VACNTs). Chemical Vapor Deposition (CVD) is the method used in this experiment to synthesize CNTs. The first step of the experiment is creating thin film ranging from a sub-monolayer to a few monolayers thick; this is used as a substrate to grow the CNTs forest. The thin film substrate is created by means of the Thermal Evaporation Physical Vapor Deposition (TPVD) process. The nanoparticle thin film substrate is synthesized using a transition metal acts as the nucleation points for CNT growth. After the thin film substrate is synthesized, the CNTs are grown by CVD method. Analysis of the thin film substrate and CNTs is performed primarily using Scanning Electron Microscopy (SEM). Various substrate and thin film material sources will be used to determine the best catalytic surface for CNT synthesis. By growing a forest of uniformed VACNTs, further analysis of the material's characteristics can be carried out. This thesis project's focus is to explore different materials for both thin film and CNT synthesis.

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