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### **Super Growth Carbon Nanotubes**

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Water assisted CVD (denoted as Super Growth) results in a significant enhanced catalyst activity and elonged lifetime of the catalysts to synthesize carbon nanotubes. The high efficient growth results in massive growth of vertically-aligned single-walled nanotubes forests with heights up to 2.5 millimeters and carbon purity over 99.98%. Super Growth simultaneously addresses many critical problems such as scalability, purity, and cost, and opens up innumerable opportunities ranging from fundamental research to real applications. This presentation will provide an overview of our recent development of the “Super Growth” CVD. First, the synthesis of highly efficient impurity free SNWT forest will be described. Second, the growth dynamics will be explored with our recent advance in CNT synthesis, as well as characterizing the physical and chemical properties of SWNT forests. Third, various new forms of carbon nanotube material such as DWNT forests, SWNT solids made by utilizing the super-growth technique will be demonstrated with emphasis on their applications such as super-capacitors. Lastly, challenges and future projects that are planed will be summarized.