

Abstract Submitted  
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**Atomic Layer Deposition of Tungsten on Carbon Nanotubes**<sup>1</sup> JASON ANDERSON, COLLIN BROWN, DAVID ALLRED, Brigham Young University — Microelectromechanical systems (MEMS) fabrication traditionally uses the same limited methods and materials as those used in the silicon-based microelectronics industry. In order to make MEMS out of a richer suite of materials, such as metals, Brigham Young University researchers are investigating chemical vapor deposition and atomic layer deposition of patterned carbon nanotube (CNT) forests, using the surface of the carbon nanotubes as nucleation sites for metal deposition. Our goal has been to fill in spaces between CNTs by atomistic deposition, thus creating a CNT-composite material possessing the original pattern of the CNT forest. We have attempted to do this using tungsten hexafluoride and hydrogen. As deposited the materials are not pure metals, but contain substantial amounts of carbon and oxygen. Most recently tungsten fluoride via both CVD and ALD is being used to attempt creation of purer tungsten structures. Efforts to remove impurities as well as the electrical and mechanical properties of the resulting composite material will be reported.

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Jason Anderson  
Brigham Young University

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