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CVD Metallized Nanotubes and Crystals MATT PETTIT, Tech-Source Inc, GEORGE HANSEN, Metal Matrix Composites, MAX ALEXANDER, Air Force Research Lab, TECHSOURCE INC. TEAM, METAL MATRIX COM-POSITES TEAM, AIR FORCE RESEARCH LAB TEAM — We examine a new method to produce metallized nanostructures with controlled thickness and crystal morphology. The substrate materials are placed in a flow of metal carbonyl which is photo-thermally reduced. The reduced metal species deposit on the heated nanomaterial substrate (typically multiwall carbon nanotubes or salt crystals) and form a ductile polycrystalline lattice. This process has been shown to dramatically effect the electrical and optical properties of the resulting materials. The materials were characterized by optical spectroscopy, x-ray diffraction, scanning electron microscopy, and energy disperse x-ray spectroscopy to elucidate the interactions of the metal layer with the substrate. Charge transport at the interface between particles has also been examined. When loaded into a nanocomposite there was a significant reduction in the contact resistance from nanoelement to nanoelement compared to the uncoated materials.

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