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In-plane Thermal and Electrical Transport Through Single-walled Carbon Nanotube Thin Films A.J. FERGUSON, A.D. AVERY, K.S. MISTRY, National Renewable Energy Laboratory, B.L. ZINK, University of Denver, M.L. OLSEN, P.A. PARILLA, J.L. BLACKBURN, National Renewable Energy Laboratory — Recent advances in both chemical processing and fabrication techniques have enabled the development of a variety of new nanostructured materials for energy conversion technologies. Single-walled carbon nanotube (SWNT) networks may enable a number of cost-effective energy technologies, including transparent conductors for photovoltaics and thermoelectric composites. For such applications, a fundamental understanding of the physics governing their thermal and electrical properties is needed. Transport in SWNT networks is highly anisotropic; therefore the ability to measure the in-plane transport, both thermal and electrical, for these systems is extremely important. In this talk, we discuss the dispersion of highly enriched semiconducting SWNTs in organic solvents and deposition techniques optimized to enable measurements of in-plane transport of uniform thin films. We present results from in-plane thermal and electrical measurements as well as optical properties of SWNT:polymer thin films. Finally, we discuss the application of these results to developing nanocomposite films optimized for thermoelectric applications.

Andrew Ferguson
National Renewable Energy Laboratory

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