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**Thermomagnetic Measurements of Transport in Single Walled Carbon Nanotubes** J. P. HEREMANS, The Ohio State University, Columbus OH 43210, C. M. THRUSH, Delphi Research Laboratories, Shelby Township MI 48315, V. JOVOVIC, J. WEST, The Ohio State University, Columbus OH 43210 —
The thermomagnetic transport properties of single walled carbon nanotubes bundles and mats in high magnetic fields have been measured in vacuum and in the presence of noble gases. They are used to determine mechanism responsible for change in thermopower and resistivity in the presence of gases with respect to one measured in high vacuum. The thermopower and its change in a magnetic field is recorded in Ne, Ar, Xe atmospheres. The variation of the zero-field thermopower with the presence of noble gases is consistent with that observed recently [1]. The magnetothermopower in a saturating magnetic field is only 0.2% larger than the zero-field thermopower. As the magnetothermopower in high field is independent of the scattering mechanism, this result argues in favor of diffusion mechanism as responsible for variations in transport properties, and against the recently suggested concept that collisions between gas molecules and the nanotubes are responsible for the changes in thermopower.

[1] H. E. Romero, K. Bolton, A. Tosen and P. C. Eklund, Atom Collision-induced Resistivity of Carbon Nanotubes, Science 307 89 (2005)

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