Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A Multi-scale Approach to Nano-Composite Nickel-Based Materials[1] ANGELA WILSON, JAMAL UDDIN, THOMAS CUNDARI, University of North Texas — The behavior of nano-composite materials that are formed by incorporating aligned carbon nanotubes (CNTs) into a bulk nickel matrix have been considered. Mechanical properties of these novel materials have been predicted and strain-stress relationships have been investigated by atomistic calculations with interactions derived from the modified embedded-atom method (MEAM). The mechanical stability has been assessed, with consideration of Young's modulus both within and beyond the small elastic deformation regime. Comparisons have been made between Ni/CNTs, the pure FCC nickel matrix, and pristine CNTs. Both single-walled and multi-walled nanotube systems have been considered.

[1]Support is acknowledged from the Air Force Research Laboratory.

Angela Wilson
University of North Texas

Date submitted: 20 Nov 2009 Electronic form version 1.4