

Abstract Submitted
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Intershell Interaction in a Double Wall Carbon Nanotube with Determined Chiral Indices under a Torsional Strain LETIAN LIN, Curriculum in Applied Sciences and Engineering, University of North Carolina at Chapel Hill, TAORAN CUI, SEAN WASHBURN, LU-CHANG QIN, Department of Physics and Astronomy, University of North Carolina at Chapel Hill — We have used a double wall carbon nanotube to build a torsional pendulum. The nanotube worked as a torsional bearing for a metal block. An external electric field was used to rotate the metal block to cause a fully elastic torsional deformation on the nanotube. Nano-beam electron diffraction patterns were taken before and while the nanotube was twisted. By analysis of the shift of the diffraction patterns, we were able to determine the nanotube chiral indices and measure the inner-shell torsional responses to the torsional stress applied on the outer-shell. The inter-shell interactions and nanotube shear modulus were also calculated and discussed in connection to the theoretical estimations.

Letian Lin
Curriculum in Applied Sciences and Engineering,
University of North Carolina at Chapel Hill

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