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Mechanical and electrical properties of carbon nanotube nanosprings XINQI CHEN, Department of Mechanical Engineering, Northwestern University, RAMSEY STEVENS, MEYYA MEYYAPPAN, NASA Ames Research Center, RODNEY RUOFF, Department of Mechanical Engineering, Northwestern University — We have studied the mechanical properties of carbon nanotube (CNT) nanosprings with a nanomanipulator operated inside of a scanning electron microscope and compared the results with a previous measurement of amorphous carbon nanosprings. The results of tensile loading experiments show that the CNT nanosprings have a force constant of 20-50 N/m per unit coil and the amorphous carbon nanosprings have a force constant of 1.1N/m. We have also performed compression experiments, and in this talk, we will discuss the buckling of a CNT nanospring. Two clamping methods have been used in this work, and the results show that both are reliable methods for mechanical measurements. With atomic force microscopy, electrical measurements have also been performed.

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Xinqi Chen
Department of Mechanical Engineering, Northwestern University

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