

Abstract Submitted
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Optical Determination of the Flexural Rigidity of Carbon Nanotube Ensembles¹ PRABHAKAR BANDARU, CHINUNG NI, CHRISTIAN DECK, Materials Science, UC, San Diego — We demonstrate two simple and consistent optical methods for quantitatively determining the flexural rigidity (EI , where E is the elastic modulus and I , the moment of inertia), a quantity of practical importance in determining the deflection and buckling characteristics of carbon nanotubes (CNTs). This is done through monitoring the deflection of patterned arrays of CNTs subject to fluid flow. In addition to mechanical characterization of filamentous nanostructures, the implications of our work extend to the monitoring of nanoscale fluid flows, for tactile and shear force sensors and the characterization of the mechano-sensor response of cilia in physiology.

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