Abstract Submitted
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Hydrodynamic rotational friction of single-wall carbon nanotubes in liquid suspension[1] JERRY SHAN, FRANK ZIMMERMANN, Rutgers University — The hydrodynamic resistance to rotation in liquid suspension of single-wall carbon nanotubes 1 nm in diameter was experimentally investigated and compared with theoretical predictions. Nanotubes were forced to rotate into alignment with an external electric field, and the rate of their alignment response was measured with laser polarimetry. The measured rates of change of the nematic-order parameter were approximately consistent with theoretical predictions based on classical, no-slip hydrodynamics. This implies that, despite the reduced resistance previously reported for internal flow through carbon nanotubes, and the fact that the nanotubes' diameter is of the same order as the size of the solvent molecules, classical continuum hydrodynamics essentially holds for external flow about individual single-wall carbon nanotubes in liquids.

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