

Abstract Submitted
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Dielectric response of aligned semiconducting single-wall nanotubes B.J. LANDI, RIT, J.A. FAGAN, J.R. SIMPSON, L.J. RICHTER, I. MANDELBAUM, D.L. HO, NIST, R. RAFFAELLE, RIT, A.R. HIGHT WALKER, B.J. BAUER, E.K. HOBBIE, NIST — We report measurements of the full intrinsic optical anisotropy of isolated single-wall carbon nanotubes (SWNTs). By combining absorption spectroscopy with transmission ellipsometry and polarization-dependent resonant Raman scattering, we obtain the real and imaginary parts of the intrinsic SWNT permittivity from aligned semiconducting carbon nanotubes dispersed in stretched polymer films. Our results are in agreement with theoretical predictions, highlighting the limited polarizability of excitons in a quasi-1D system. We discuss the dependence of the measured optical response on nanotube length.

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