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Broadband Rayleigh Scattering and Photoconductivity Spectra of Individual Semiconducting Single-Walled Carbon Nanotubes[1]
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Combining a Fourier-transform measurement of photoconductivity with Rayleigh spectroscopy, we have identified the four lowest-lying optical transitions from specific, individual single-walled carbon nanotubes. In these investigations we made use of the previously reported transfer technique [1] to obtain samples with optimized arrangements both for Rayleigh (freely suspended) and photoconductivity (transistor geometry) spectroscopy. The combination of these two optical characterization techniques yields high-resolution spectra of the electronic transitions of individual nanotubes over a spectral range extending from 0.3 – 2.7 eV. We will discuss the details of the spectra that we have obtained for individual single-walled nanotubes of defined chiral index, including the observation of asymmetric lineshapes for the lowest-lying optical transition. [1] X. M. H. Huang, et al., Nano Lett. **5**, 1515 (2005).

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