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Pump-probe excitation spectroscopy of chirality enriched SWNT suspensions ZIPENG ZHU, Vanderbilt University, MICHAEL ARNOLD, Northwestern University, JARED J. CROCHET, Vanderbilt University, MARK HERSAM, Northwestern University, CLAY MCPHEETERS, Rice University, DANIEL E. RESASCO, University of Oklahoma, HENDRIK ULBRICHT, University of Vienna, TOBIAS HERTEL, Vanderbilt University — We study the transient optical response of chirality enriched SWNT samples by conventional pump-probe and pump-probe excitation spectroscopy using visible pump and white-light continuum probe pulses. Comocat starting material is suspended using either SDBS or DNA as surfactants. In addition, DNA suspended samples have been isopycnically fractionated. Transient spectra of these sample are significantly less congested than multidisperse suspensions, which greatly simplifies the interpretation of photo-bleaching and photo-absorption transients. The newly developed technique of pump-probe excitation spectroscopy (PPES) also allows to study previously inaccessible aspects of the dynamics of the second subband E_{22} exciton decay. Experiments indicate that $E_{22} \rightarrow E_{11}$ interband relaxation rates are higher than the decay of G-mode phonon sidebands seen not only in PPES but also in photoluminescence excitation spectra.

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