

Abstract Submitted
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Resonance Raman Spectroscopy of Armchair Single-Walled Carbon Nanotubes ERIK HAROZ, WILLIAM RICE, BENJAMIN LU, Department of Electrical and Computer Engineering, Rice University, ROBERT HAUGE, Department of Chemistry, Rice University, DONNY MAGANA, STEPHEN DOORN, Chemistry Division, Los Alamos National Laboratory, PASHA NIKOLAEV, SIVARAM AREPALLI, Johnson Space Center, National Aeronautics and Space Administration, JUNICHIRO KONO, Department of Electrical and Computer Engineering, Rice University — We performed resonance Raman spectroscopy studies of metallic single-walled carbon nanotubes (SWNTs), including armchair SWNTs from (6,6) through (10,10). The measurements were carried out with excitation of 440-850 nm on aqueous ensemble samples of SWNTs enriched in metallic species. From this, we generated Raman excitation profiles (REPs) of the radial breathing mode and compare the REPs of armchairs and other metallic species. Additionally, we measured REPs of the G-band mode and observed how the Breit-Wigner-Fano line shape of the G^- peak evolves in peak position, width and intensity relative to the G^+ peak as different metallic nanotubes are excited. By combining these studies with absorption and photoluminescence excitation spectroscopy studies, we present a comprehensive examination of the optical signatures of metallic SWNTs.

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