

Abstract Submitted
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Resonant Raman spectroscopy analysis of single wall carbon nanotubes treated with high density plasma of different gases.¹ DAVID MAST, CHAMINDA JAYASINGHE, ZHANDOS UTEGULOV², University of Cincinnati — Single wall carbon nanotubes (SWNTs) have been plasma treated with different gases (Ar, O₂ and Ar and H₂ gases mixtures) using an inductively coupled RF plasma system (IC-RFP). The gas pressure was varied from 50mtorr to 315mtorr at 50W plasma power. Microscopic plasma parameters including ion density (n_i) and electron temperature (T_e) (thermal energy of electrons) were been determined using a double Langmuir probe in the plasma. Treated SWNTs was been characterized using resonance Raman spectroscopy at 515nm and 633nm laser excitation. It was observed that there was a considerable increase of the D to G-band ratio of treated SWNTs with increasing gas pressures and also that the Breit-Wigner-Fano band (G_{BWF}) to G⁺-band ratio was been considerably increased. Further, at 515nm laser excitation the frequency up-shift of the G-band for Ar &(5%) H₂ (gas mixture) plasma treated SWNTs was higher at all pressures than those of other gases.

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