

Raman studies of carbon felt treated at different temperatures

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Application of Raman spectroscopy was used to analyze carbon felt. Raman spectra of carbon felt treated at different temperatures and highly oriented pyrolytic graphite (HOPG) have been investigated. Carbon felts were heat treated at different temperatures ranging from 1100°C to 2100°C. Raman measurements were conducted at 514 nm excitation wavelength. First and second order was analyzed by curve fitting with different band combination. First-order, double-resonance (DR) and the second-order Raman scattering mechanisms in HOPG which give rise to the most prominent Raman features were discussed. The present study illustrates the Raman spectroscopy for understanding the evolution of curve fitting as a function of temperature. The fitting was conducted by the combination of Lorentzian and Gaussian shaped bands. Several features were identified for first and second-order. For the highest temperature the results revealed the appearance of five different bands for the second-order spectra. The degree of organization was evaluated by the parameter $R=I_{D1}/(I_G + I_{D1} + I_{D2})$. Besides, the evolution of linewidth with the temperature was also investigated. The results demonstrated a gradual change in the D and G bands as a function of the temperature. The fitting take into account the D_3 band for the complete interpretation of Raman spectra. The appearing of D_3 in between D and G band may explain the linewidth evolution with the temperature.