



PLASMA FUNCTIONALIZATION
OF MULTIWALL CARBON NANOTUBES
FOR INDUSTRIAL APPLICATIONS

YouTube  

PROF. ESSAM ABDEL-FATTAH
ZAGAZIG UNIVERSITY
AND PRINCE SATTAM
BIN ABDULAZIZ UNIVERSITY
HOSTED BY
MOHAMED EZZAT, MSc

Flow In Shut-off Valves Pump Out

RF Pwr Supply O-Ring Petri Dish (Quartz) Plasma Carbon Nanotubes

Collimator + Optical Fiber To Spectrometer

30 mm

THURSDAY, 25 AUG 2022

TIME 17:30 (CAIRO)

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Title: Plasma Functionalization of Multiwall Carbon Nanotubes for Industrial Applications

Speaker: [Prof. Essam Abdel-Fattah](#) (Zagazig University and Prince Sattam bin Abdulaziz University)

When: 2022-08-25 17:30:00 - **Hosted by:** Mohamed Ezzat, MSc

Abstract: In this work, we introduce a simple route to functionalize MWCNT using plasma technology. The plasma (RF-DBD) was characterized by optical emission spectroscopy OES. The plasma-treated MWCNTs have been characterized by means of SEM/TEM, X- XPS, Raman spectroscopy and Xray diffraction XRD. The results of OES shows species O, OH, N2, CN, C2 and H?, confirming the rich plasma environment and active interaction between the MWCNT and plasma species. T_{vib} and T_{rot} were estimated by comparing the experimental and simulated spectrum. The density of N radicals in the Ar-N2 plasma was estimated by optical actinometry technique. The XPS results revealed that various functional groups, based on the gas type/composition, exists on MWCNTs treated in plasma mixture. The integrity of the plasma treated MWCNTs remained undamaged as observed by TEM images and XRD results. The plasma treatment of MWCNT improved their dispersion within polymer matrix, and hence improved the physical characteristics of the MWCNT/Polymer composite.

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