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Structural and Mechanical Properties for a Monolayer of Single Wall Carbon Nanotubes Produce by Langmuir-Blodgett Technique

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A truly single layer (monolayer) film of unmodified zigzag single-walled carbon nanotubes by using Langmuir Blodgett (LB) technique have been processed. Measurements of their properties in bundles which include stress-strain behavior (mechanical properties) and optoelectrical properties that related to the structural of the tubes are applied. The produced films were highly oriented as determined by polarized Raman spectroscopy, scanning tunneling microscopy (STM) and by measuring electrical properties in the oriented direction. High Resolution Transmission Electron Microscopy (HRTEM) is also used to study the characterizations of SWCNT's. The produced films demonstrate a linear stress/strain behavior up to 30% strain and then deviate from linearity. None of the chemical treatment or surfactant oxidation processes are applied in this study.

Biography:

Ali M. Al Mafarage, has M.Sc. in civil engineering (structure) from AL-Nahrain University in 2005 from Iraq and earn M.Sc. in material science in engineering (nanotechnology), 2018 from Wright State University in USA. His advisor is Professor Maher S. Amer. He received fellowship from Higher Education Council of Iraq (HCED) to pursue his Ph.D. Degree from Wright State University in material science and nanotechnology. He submitted a paper, but it is still under the reviewer section. He represented in (AIAA) conference held in Dayton Ohio, 2018 as a speaker and in material science and engineering conference in Nov. 2018, Atlanta, USA, as speaker also.