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Effect of NH₃ injection moment and duration on N-MWNT@MWNT nanohybrid characteristics: *In situ* and *ex situ* partial doping mode

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In this investigation, Nitrogen-doped Multiwall Carbon Nanotubes (N-MWNTs) in nanohybrid new shape structural were prepared as a new catalyst support or new electrodes for energy storage using original way of partial doping focused on how to introduce the ammonium as nitrogen source during the CCVD doping process partial doping mode. Furthermore, the variations in this doping time were applied ranging from 30 min to 90 min of the total growth period depending to the doping mode (fixed to 120 min for *in situ* and variable for *ex situ* mode reaching 180 min). A strong correlation between ammonia injection duration inside the growth and nitrogen concentration in the tube graphitic walls was observed between (0.15 at.% and 2.5 at.%) in form of outer waved walls with different coordination of carbon and/or oxygen as functional groups. These functionalized MWNTs were studied using High resolution TEM, FESEM, XPS, FTIR, BET, Thermal analysis and Raman spectroscopy to determine their structural characteristics, graphitization and crystallinity degree in quantitatively and qualitatively point of view. Consequently, we studied the effect of these partial N doping MWNTs as catalyst support on the catalytic activity and their selectivity towards the liquid phase hydrogenation of cinnamaldehyde CAL using 10 wt.% Pd as active phase.

Biography

O Guellati is a Permanent Researcher in LEREC laboratory in Algeria. She has completed her PhD from Badji-Mokhtar University of Annaba, Algeria on production of Carbon Nanotube (CNTs) using CCVD technique and their functionalization and micronization. She has published 17 papers in reputed journals. She is currently a Reviewer in *Nanoscale Research Letters*. She is working on the production of transition metal hydroxides, oxides and their nanocomposites/nanohybrids with CNTs and graphene (purified and functionalized one) for energy storage and environment application. She is working in collaboration with ICPEES at ECPM, Strasbourg, France, IMS at University of Valencia, Spain and SARChI Chair in Carbon Technology and Materials at Pretoria University, South Africa.

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