Chem Sci J 2016, 7:3(Suppl)
http://dx.doi.org/10.4172/2150-3494.C1.006

Electrical properties of nitrogen-doped carbon nanotube/polymer nanocomposite: Impact of synthesis catalyst

Mohammad Arjmand
University of Calgary, Canada

Nitrogen-doped carbon nanotubes (N-CNTs) were synthesized by chemical vapor deposition technique, wherein source and carrier gases (ethane, ammonia, and argon) were passed over alumina-supported metallic catalysts in a quartz tubular reactor at 750^{0}C. Three different types of catalysts were used to synthesize N-CNTs: namely Co, Fe, and Ni. Synthesized N-CNTs were mixed with a polyvinylidene fluoride (PVDF) matrix with a miniature melt mixer at 240^{0}C, and the resulting nanocomposites were compression molded. The morphology, aspect ratio, synthesis yield (weight of N-CNTs over the weight of final material) and nitrogen content of N-CNTs were investigated. We also studied the morphology, rheology, electrical conductivity and electromagnetic interference (EMI) shielding of the nanocomposites. Substantial differences were observed in the synthesis yield, and the morphological, rheological, and electrical properties of the generated materials depending on catalyst type. $(N\text{-}CNT)_{Co}$ nanocomposites showed superior electrical properties compared to the other two types of catalyst. This was ascribed to a combination of high synthesis yield, high aspect ratio, low nitrogen content and high crystallinity of $N\text{-}CNT_s$ combined with good state of N-CNT dispersion.

marjmand@ucalgary.ca

Synthesis of 2, 3-disubstituted indoles via Pd-catalyzed tandem heteroanulation of α-diketones and N-arylamines under reductive conditions

Pankaj Sharma
Instituto de Quimica, Mexico

Herein we report a new straight forward catalytic synthesis of N-substituted indoles from α-diketones 1 and N-substituted anilines 2 by employing Palladium (II) complex and phosphine ligands under reductive conditions. The tandem reaction involves enamine and ketoamine as intermediates and final annulation-dehydration reaction to obtain the N-substituted indole. New Palladium-hydride species were observed in the NMR studies which catalyzes the reaction.This report constitutes a new regioselective route to synthesize indoles under reductive conditions.

pankajsh@unam.mx