

CuO nanoparticle composite structures with carbonnanotubes

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Multiwalled carbon nanotubes (MWCNT) were grown on the Cu foil substrates by electrophoretic deposition (EPD) method. It is shown that the CNT distribution on the Cu substrates greatly depends on the applied voltage and the solvent type such as, deionize water, acetone or triethylamine. XPS measurements have shown formation of Cu_xO_y for the CNT growth in each solvent type. Highly homogeneous CNT deposition on the Cu surface has been achieved by acetone solution within a shorter time. Also, it is observed that the amount of oxide in the structures produced in the acetone/CNT solution is less confirmed by the X-ray Photoelectron Spectroscopy (XPS) analysis.

Annealing at higher temperatures of those Cu/CNT structures gives rise to Cu_xO_y nanoparticles formation together with CNT. Also, by annealing at relatively high temperatures around 900 °C Cu/CuONP/CNT composites structures are formed. It is seen that CNT structures becomes graphitic like structures covered by CuO NPs under high temperatures annealing.

Figures

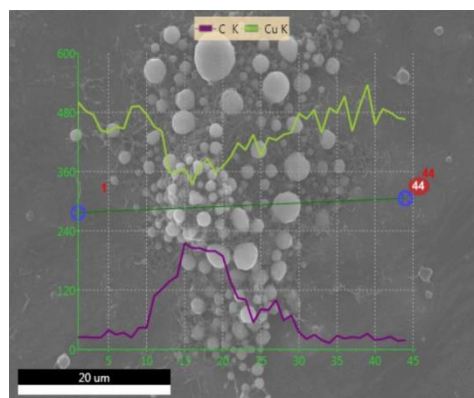


Figure 1. SEM images and EDAX line analysis of Cu/CuONP/MWCNT composite film

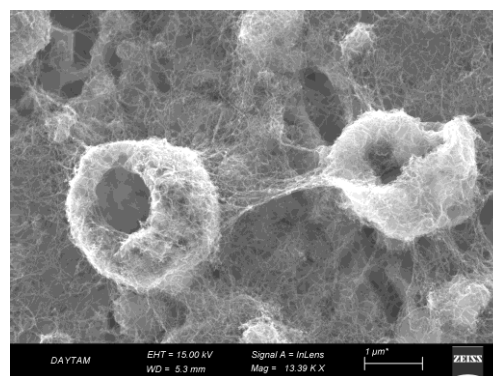


Figure 2. SEM images of Cu/CuONP/MWCNT composite film

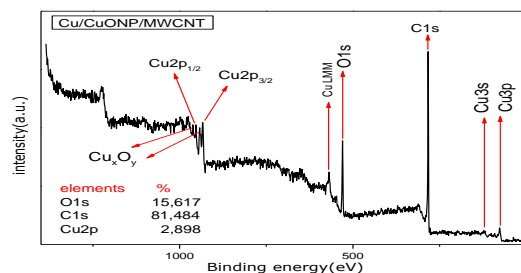


Figure 3. XPS survey spectrum of Cu/CuONP/MWCNT composite film