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## Production of Carbon Nanotubes-Nickel Composites on Different Graphite Substrates

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**Abstract:** Multi walled carbon nanotubes (MWCNTs) were synthesized on different graphite types covered with thin layer of nickel catalyst by catalytic chemical vapour deposition using acetylene as hydrocarbon source. The produced carbon nanotubes were investigated by scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS) and transmission electron microscopy (TEM). The shape, quantity and diameter of the MWCNTs are shown to be affected by the type of the graphite substrate, the growth temperature and the hydrocarbon source flow rate. The diameters of the produced MWCNTs were ranged between 43 and 80 nm for pyrolytic (PYROID) and polycrystalline (AXF-5Q) graphite, respectively when the growth temperature was 800 °C and acetylene flow rate 570 cm<sup>3</sup>/min. This graphite containing MWCNTs can be used as a cathode in the Physical vapour deposition (PVD) system to produce MWCNTs embedded in a Diamond-like Carbon (DLC) coating.