Synthesis and characterization of platinum nanoparticles on polyethyleneamine functionalized multi-walled carbon nanotube

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The composite materials consisting of platinum (Pt) nanoparticles highly dispersed on multiwalled carbon nanotube (MWNT) support were prepared with MWNT functionalized with polyethyleneimine(PEI). The cationic polyelectrolyte functionalization provided high density and homogeneous functional groups on the NWNT sidewalls for binding Pt nanoparticles. The effect of the functionalization on the deposition and distribution of Pt nanoparticles was investigated by comparison of PEI-functionalized MWNT and acidic treated MWNT. The concentration of Pt source and PEI influenced on the morphology and the amount of immobilized Pt nanoparticles on the surface of MWNT. The composite materials were characterized with TEM, SEM-EDS, FT-IR and XRD.