

Ex situ and in situ electron microscopic study of the modification of carbon nanotubes

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Nowadays, hundreds of researches are aimed to use carbon nanotubes (CNTs) as catalyst support due to their outperforming mechanical, thermal, adsorption and electrical properties. CNT supported metal or metal-oxide nanoparticles show much higher activity and stability both in oxidative and reductive catalytic reactions compared to other carbonaceous or oxide-type supported counterparts.

In spite of the unique properties, the metal or metal-oxide nanoparticles can cause digestive modification in the carbonaceous support due to catalytic consumption of the CNTs (*Fig. 1.*).

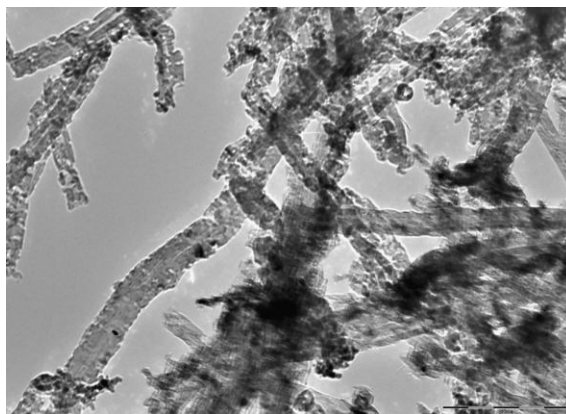


Fig. 1. *Palladium catalyzed oxidative digestion of carbon nanotubes*

For investigation of these types of interaction between the CNTs support and the catalysts Me/CNT nanocomposites prepared through a wet chemical impregnation method were heat treated under air on different temperature and for different duration. The catalytic oxidation of CNTs was monitored by Transmission electron microscopy, Electron and X-ray diffraction and Thermal gravimetric analysis.