Silicate Substrates Used to Anchor Iron Particles Catalysing the Formation of Carbon Nanotubes

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Abstract. We employed different silicates (montmorillonite, zeolite, kaolinite, pyrophyllite, nontronite, chrysotile, vermiculite and sepiolite) and other materials (non-porous non-conductive optically transparent substrates, namely quartz and sapphire, porous skeletons of SiO_2 aerogel and Al_2O_3, samples obtained from mining waste from the water flowing out of the abandoned mine) as Fe-containing catalysts for synthesis of CNTs. Synthesis of carbon nanotubes was performed by hot filament chemical vapour deposition using methane as a source of carbon. The prepared carbon nanostructures were analysed by electron microscopy and Raman spectroscopy. We compare the influence of the structure of selected fibrous and layered mineral substrates on the morphology of the nanocomposite.