

Carbon nanotubes preparation using Fe-MCM-41 with cobalt addition

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CNTs were prepared in a CCVD apparatus using Fe-MCM-41 as a catalyst/nano-template. Yields of the carbonaceous materials formed were measured and characterized using various instruments. With C_2H_2 as a carbon source, a set of $750^\circ C$, 200 sccm of $Ar : H_2 : C_2H_2$ (14 : 5 : 1) mixture, and 1 h reaction time was established to be the optimum synthesis condition. Oxidation at $470^\circ C$ followed by acid treatment using HF produced high quality MWNTs. Also, it was possible to observe the growth of SWNTs by combination of Fe/Co catalysts : SWNTs were grown only in the case of direct inclusion of Fe to MCM-41 support with post-inclusion of Co.