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## Solution-phase synthesis of chromium-functionalized single-walled carbon nanotubes

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### Abstract

The solution phase reactions of single-walled carbon nanotubes (SWNTs) with Cr(CO)<sub>6</sub> and benzeno-Cr (CO)<sub>3</sub> can lead to the formation of small chromium clusters. The cluster size can be varied from less than 1 nm to about 4 nm by increasing the reaction time. TEM images suggest that the clusters are deposited predominantly on the exterior walls of the nanotubes. TGA analysis was used to obtain the Cr content and carbon to chromium ratio in the Cr-complexed SWNTs. It is suggested that the carbon nanotube benzenoid structure templates the condensation of chromium atoms and facilitates the loss of carbon monoxide leading to well defined metal clusters. (C) 2014 Elsevier B.V. All rights reserved.

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