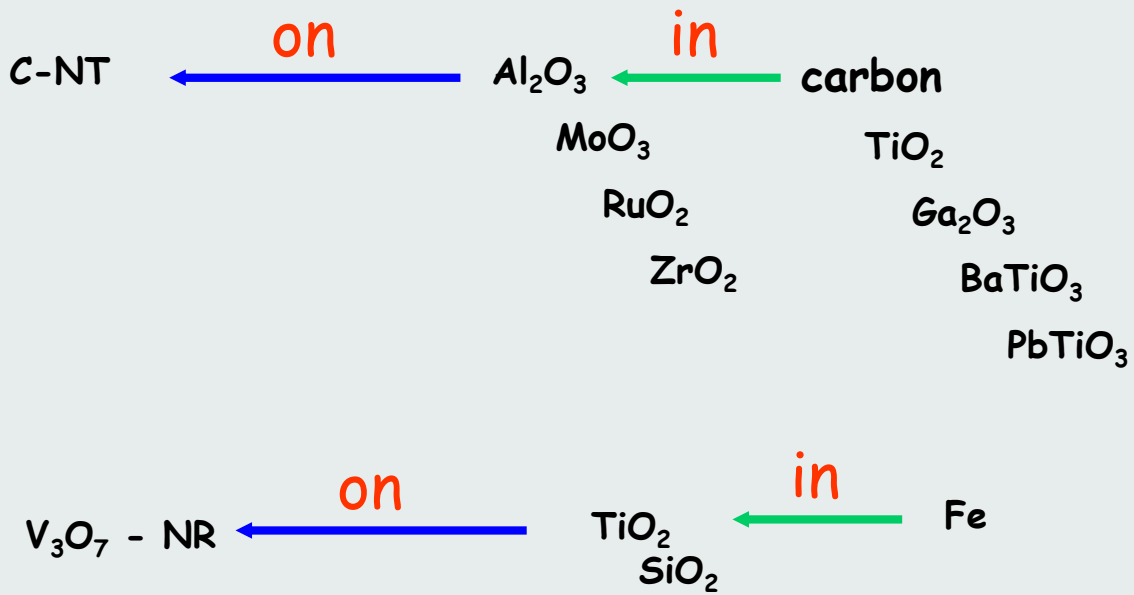
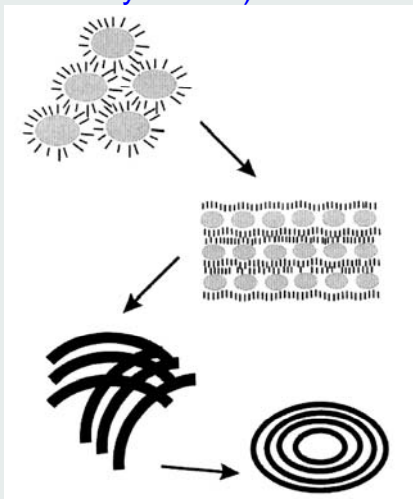


Secondary Nanotubes and Fills

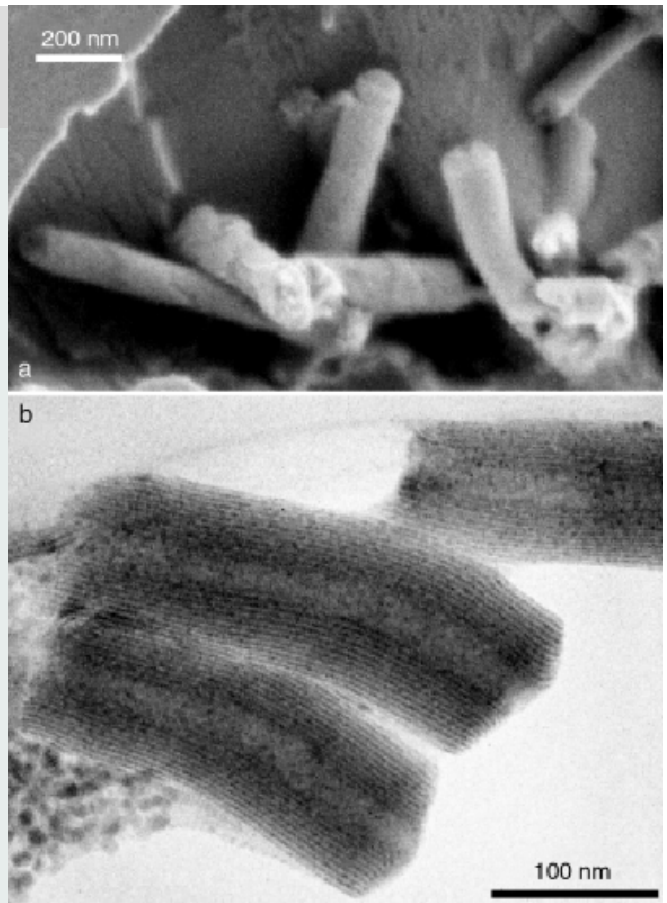


Composite Nanotubes

Self-assembly in a colloid containing PbS nanoparticles, a polymer (poly(ethylene oxide)), and a surfactant (sodiumdodecylsulfate)

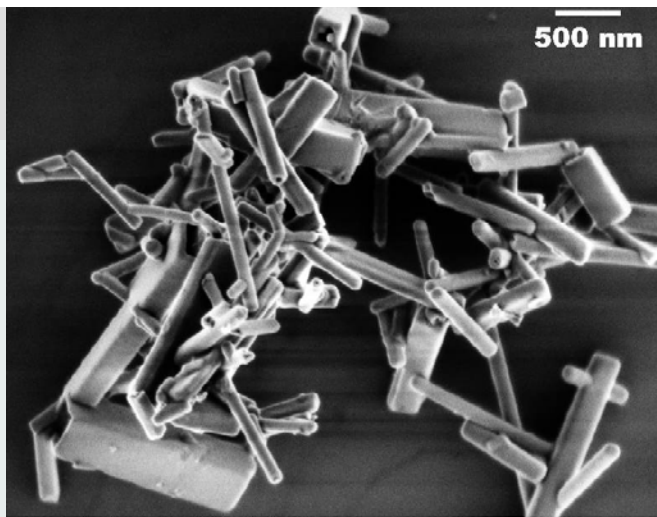


tube walls comprise well-developed layers of PbS nanoparticles that are embedded in the organic matrix structure

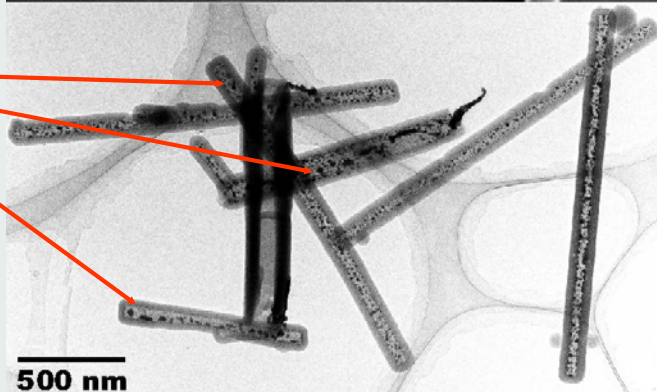


Silica Nanotubes

$[Pt(NH_3)_4(HCO_3)_2]$ single crystals
coated by SiO_2 and TiO_2
through $Si(OEt)_4$ or $Ti(OEt)_4$

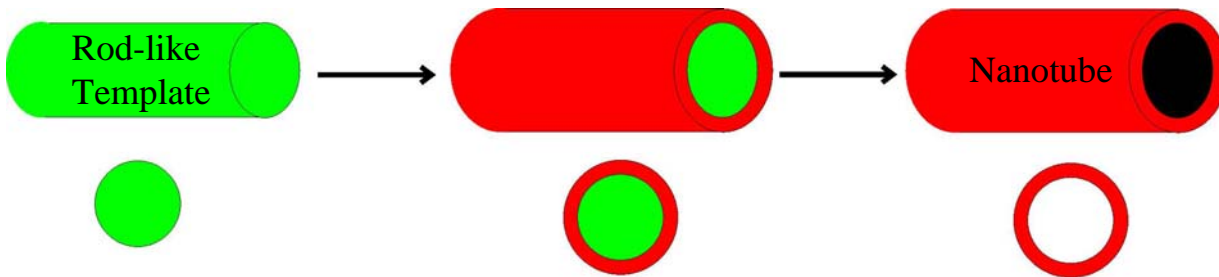


Pt



Hippe, Wark, Lork, Schulz-Ekloff,
Microp. Mesop. Mater. 31
(1999) 235

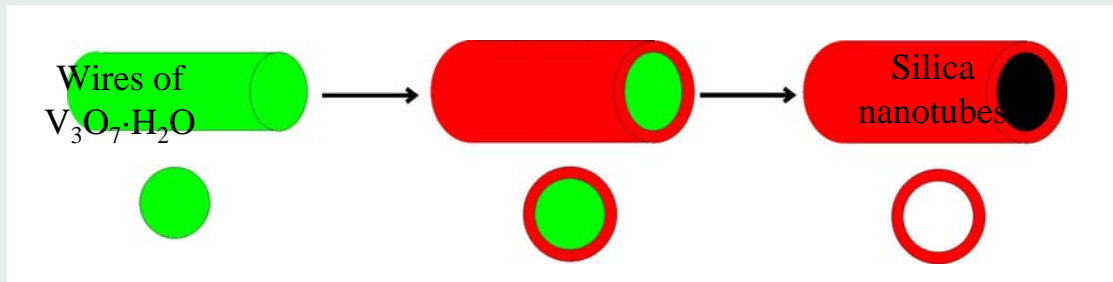
Template-assisted Synthesis of Nanotubes



Coating of anisotropically structured template with a second material

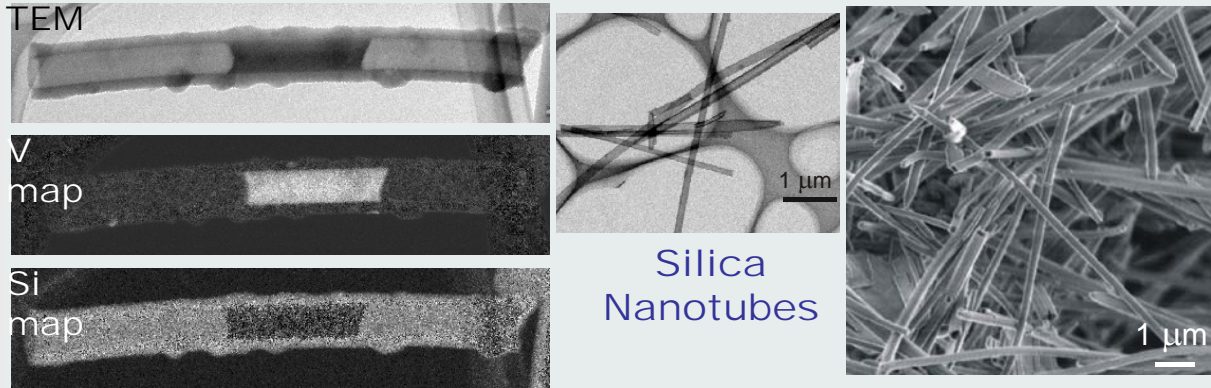
Removal of template

Template-assisted Synthesis of Nanotube



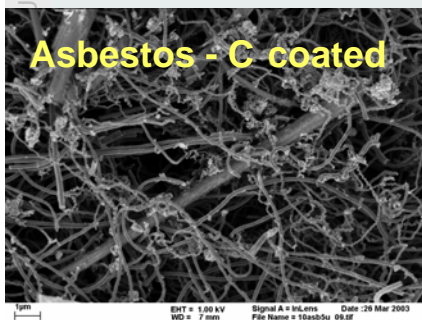
J. Zygmunt, F. Krumeich, R. Nesper, *Adv. Mater.* 2003, 15, 1538

Intermediate product

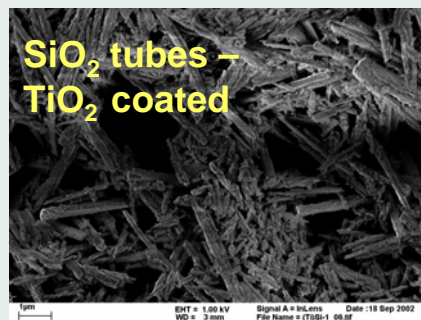


Silica Nanotubes

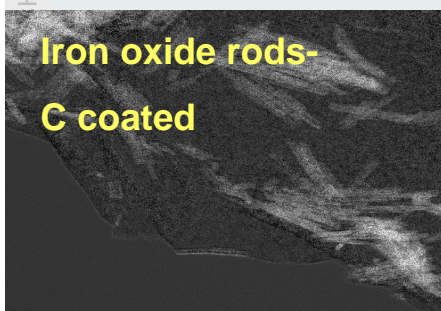
Multiple Coatings



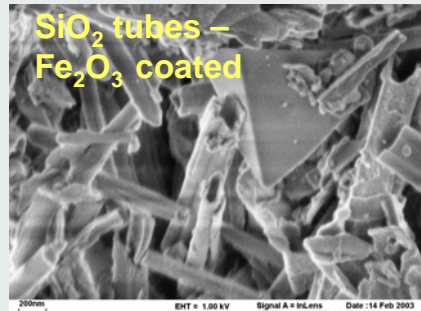
Asbestos - C coated



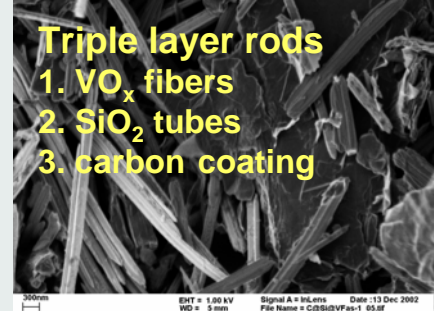
SiO₂ tubes - TiO₂ coated



Iron oxide rods - C coated



SiO₂ tubes - Fe₂O₃ coated



Triple layer rods
1. VO_x fibers
2. SiO₂ tubes
3. carbon coating