Stellingen

Behorende bij het proefschrift

Selecting Semiconducting Single-Walled Carbon Nanotubes by Polymer Wrapping: Mechanism and Performances

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1. An increase of the solvent's dielectric constant results in a red-shift of the PL peak and in a lower photoluminescence intensity. (chapter 2)
2. Temperature control during the s-SWNTs selection processes is very important. During the selection processes a temperature higher than 10 °C allows destroying small carbon nanotubes bundles. (chapter 3)
3. Increasing the number of carbon atoms in the alkyl-side chains results in the selection of s-SWNTs with a wider diameter distribution. (chapter 4)
4. For polymers with alkyl side chains longer than 12 carbon atoms, there is competition between SWNT-polymer π-π interactions and Van der Waals forces which cause "zipping" of alkyl side-chains. (chapter 4)
5. The introduction of heteroatoms out of conjugated units in polymers impairs the s-SWNTs selection due to the strong interaction between electron lone pairs in the heteroatoms and polarizable nanotubes (m-SWNTs). (chapter 5 and 6)
6. The combination of the heteroatom and phenyl ring results in a higher extraction yield of s-SWNTs. (chapter 5)
7. Carbon nanotubes wrapped with polymers bearing thiol functional groups show strong attachment to gold electrodes. (chapter 6)
8. A person who never made a mistake never risk to discovered something new.
9. Good polymers are needed to select s-SWNTs; and good friends and colleagues are needed to have a successful PhD life.
10. Despite you have a good theory, if it doesn't match with the experimental results, it's wrong. (adapted from Richard Feynman)
11. To prepare SWNT solutions and devices can be easy, but to find a good solution for an experimental problem will never be so easy.