Exciton dynamics in self-assembled molecular nanotubes

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Propositions

associated with the PhD thesis

Exciton Dynamics in Self-Assembled Molecular Nanotubes

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1. The whole is greater than the sum of its parts: The collective action of thousands of coupled molecules assembled in molecular aggregates opens up exciting new physics. (This thesis)

2. The *'efficiency is the key'* principle does not always hold for spectroscopy. The seemingly inefficient approach of measuring one nanotube at a time bears valuable information that would remain inaccessible with more time- and resource-efficient methods. (Chapter 3 of this thesis)

3. Reductionism at work: the *controlled* destruction of a sample can yield as much scientific insight as careful preparation of a sample. (Chapter 4 of this thesis)

4. An adaptive light-harvesting system can be as simple as a double-walled molecular nanotube. (Chapter 5 of this thesis)

5. The effect of exciton-exciton annihilation offers an elegant means to determine a system's excitonic properties. Its interpretation, however, is subject to an intuitive pitfall, where the exciton delocalization length is mistaken for the annihilation radius. (Chapter 5 of this thesis)

6. Besides chemical ingenuity, controlled steering of self-assembly processes involves luck. Exchange of only four out of 108 atoms forming a molecule can either yield the desired result or fail entirely. (Chapter 6 of this thesis)

7. The Dutch flag provides an excellent color scale for 2D spectra, much better than the Russian flag (let alone the German flag).

8. Each page in this Thesis required preparation of an average of ~10,000 km of nanotubes.

9. The Pareto principle (colloquially referred to as "80-20" rule) applies to Dutch weather [*Hydrological Sciences Journal*, 31, 151 (1986)] as much as to a PhD project: (at least) 80% of the time is devoted to (at most) 20% of the results.