Propositions

accompanying the dissertation

Connecting chirality and spin in electronic devices

1. Near equilibrium, any spin-selective electron transmission through a chiral molecule must always be accompanied by spin-flip reflections. This makes a chiral molecule more analogous to a spin source or a spin sink, rather than to a spin filter. (Chapter 3 and 4)

2. The connection between chirality and spin is key to the next major application of molecular switches and spintronics. (Chapter 4)

3. In order to gain real understanding of a scientific subject during the course of a PhD project, theoretical and experimental work must be combined.

4. The success of a research project can only be judged after its conclusion. Not knowing when to stop eliminates the access to success.

5. PhD students who are not able to teach miss out on their greatest learning opportunity.

6. In an era flooded with information, insights can only emerge when one separates facts from opinions, observations from interpretations, and main trends from fine details.

7. Our society needs to pay as much attention to defending scientific integrity as to celebrating scientific discoveries.

8. The COVID-19 crisis highlights the inability of the public and governments to handle nonlinear dynamics. This is an alarming sign knowing that we are faced with another destructive nonequilibrium process — climate change.

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