# Resolving the dynamic structure of chlorosomes in green sulfur bacteria by MAS NMR

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**Stellingen**

**Behorende bij het proefschrift**

**Resolving the Dynamic Structure of Chlorosomes in Green Sulfur Bacteria by MAS NMR**

1. The reduced pigment heterogeneity in *bchQ* mutant chlorosomes results in measurable changes in supramolecular chirality without compromising the core structural organization of bacteriochlorophyll aggregates. (Chapter 2)
2. The secret of chlorosomal efficiency lies not in perfect order, but in the subtle motion within it. (Chapter 3)
3. Plastic crystallinity of chlorosomes is very similar in mutants and in WT. (Chapter 4)
4. Mutant chlorosomes are simplified model systems that serve as stepping stones for understanding the dynamic complexity of wild-type systems. (Chapter 5)
5. Chlorosomes of *Chlorobaculum tepidum* exemplify how nature unites structural robustness with dynamic adaptability (Chapter 2,3,4 and 5)
6. Rapid NMR dynamic spectral editing enables the observation of chlorosomal structures within living *Chlorobaculum tepidum* cells, revealing molecular detail before environmental perturbations alter their native organization
   (Chapter 6)
7. Self-assembling photosynthetic pigment aggregates demonstrate that efficient light harvesting does not require protein scaffolds.
8. Comparing isolated light-harvesting complexes with their in vivo counterparts is crucial for determining how cellular environments shape excitonic energy flow.
9. Cultivating bacteria highlights how scientific success often depends less on difficulty and more on mastering precise conditions and know-how.
10. An international Ph.D. experience fosters adaptability, collaboration, and broader scientific vision, all essential for today's global research environment.
11. Resilience in research requires optimism, much like deep-sea green bacteria thriving on the faintest traces of light.
12. My journey in research has shown that progress is rarely sudden; it grows quietly through patience, persistence, and the willingness to see meaning in small details others might overlook.

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