

## Mastering complexity: functional supramolecular systems

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The intriguing prospects of molecular electronics, nanotechnology, biomaterials, and the aim to close the gap between synthetic and biological molecular systems are important ingredients to study the cooperative action of molecules in the self-assembly towards functional supramolecular systems. The design and synthesis of well-defined supramolecular architectures requires a balanced choice between covalent synthesis and the self-assembly of the fragments prepared. The current self-assembly processes are primarily controlled by solvent, temperature or concentration. For synthetic chemists, the non-covalent synthesis of these supramolecular architectures is regarded as one of the most challenging objectives in science: How far can we push chemical self-assembly and can we get control over the kinetic instabilities of the non-covalent architectures made? How can we go from self-assembly to self-organization? Where the number of different components is increasing the complexity of the system is increasing as well. Mastering this complexity is a prerequisite to achieve the challenges in creating functional systems. In the lecture we illustrate our approach using a number of examples out of our own laboratories, with the aim to come to new strategies for multi-step non-covalent synthesis of functional supramolecular systems.

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