

Various Faces of Supramolecular Chemistry: Cation Receptors, Anion Receptors, Cages, and Beyond

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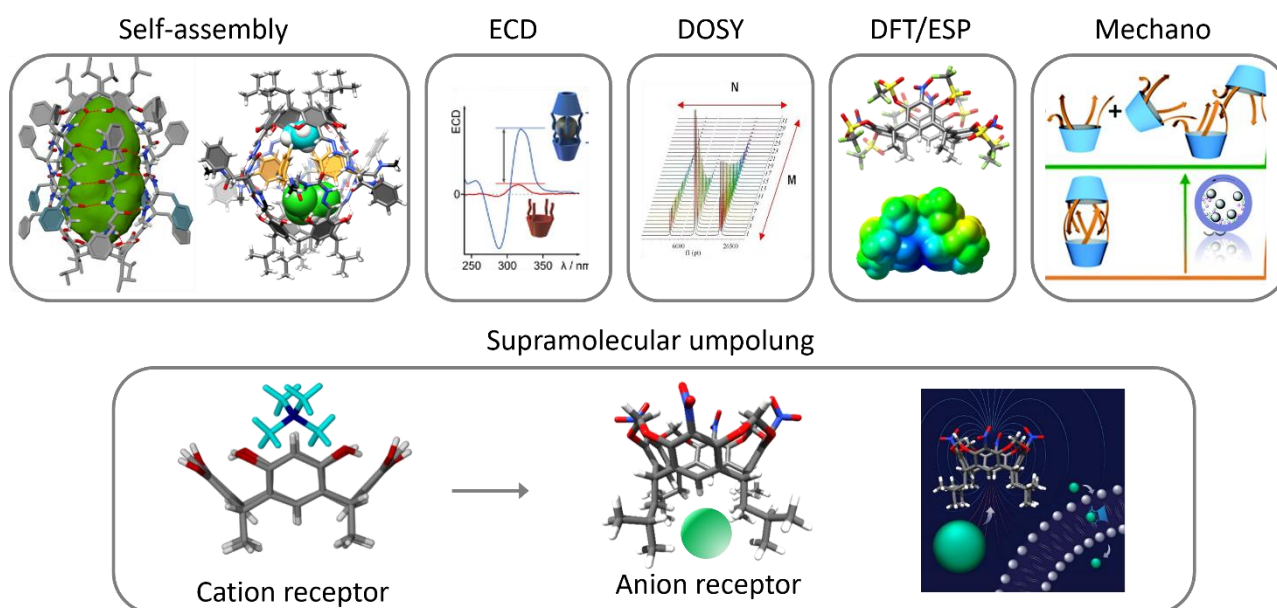
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Resorcinarenes have long been staples of supramolecular chemistry, recognized for over fifty years as easily accessible, pre-organized macrocycles. While they are classic hosts, their true potential lies in their structural versatility and ease of functionalization, which allows them to be transformed into sophisticated contemporary tools.

This lecture will explore how we have moved beyond the traditional applications of these 'old' macrocycles. We will demonstrate their utility across diverse fields:

- Construction of Chiral Peptide-Based Capsules through dynamic covalent chemistry (DCC) and non-covalent self-assembly.
- Mechanochemical Induction of Complexations. This approach involves using mechanical force (e.g., grinding) instead of thermal or photochemical energy to initiate host-guest binding, pushing the boundaries of traditional solution-based chemistry.
- Construction of Large-Stokes-Shift Fluorescent Cation Receptors based on double Excited-State Intramolecular Proton Transfer (ESIPT) mechanisms.
- Construction of CH-Bonding Anion Receptors by supramolecular umpolung. This concept involves inverting the typical chemical polarity of a functional group within the supramolecular context, allowing the weakly acidic C-H bonds of the resorcinarene framework to act as hydrogen bond donors for binding anions, which is a challenge for traditional anion receptors.



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