

From molecular dating to functional materials

Chemistry is the science of communication and change, and these interrelated processes are primarily initiated and controlled by reversible interactions between molecules. Our ability to design and synthesize discrete molecular species has been developed and refined for over a century, and today we are capable of making extraordinary molecules that rival some of Nature's best efforts when it comes to structural complexity and chemical reactivity. However, the synthesis of supramolecular assemblies composed of many different molecular fragments held together by non-covalent forces, is far less advanced.

Intermolecular forces provide the conduits through which molecules communicate and exchange information. As a consequence thereof, these forces also provide the means by which molecules can be deliberately combined and organized into assemblies with specific architectures, stoichiometries, and dimensionalities, all of which play key roles in determining fundamental properties of the resulting assemblies.

In this seminar, several strategies for direct supramolecular synthesis, based upon systematic structural studies are presented, and practical applications relevant to pharmaceuticals, agrochemicals, and energetic materials are examined.

Selected references

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