Supramolecular Chemistry
Concepts and Perspectives

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Beyond molecular chemistry, based on the covalent bond, lies the field of *supramolecular chemistry*, the chemistry of the intermolecular bond and of the structures and functions of the supermolecules formed by the binding of substrate species to a molecular receptor.

Numerous receptors capable of selectively binding specific substrates have been developed. They perform *molecular recognition* which rests on the *molecular information* stored in the interacting species. Suitably functionalized receptors may perform *supramolecular catalysis* and selective *transport processes*. In combination with polymolecular organisation, recognition opens ways towards the design of *molecular* and *supramolecular* devices based on functional (photoactive, electroactive, ionoactive, etc.) components.

Supramolecular chemistry has relied on more or less preorganised molecular receptors for effecting molecular recognition, catalysis and transport processes. A step beyond consists in the design of systems undergoing *self-organisation*, i.e. systems capable of spontaneously generating a well-defined supramolecular architecture from its components in a given set of conditions. The *molecular information* necessary for the process to take place must be stored in the components and acts through selective molecular interactions.

The design of molecular information dependent, "*programmed*" and functional self-organising systems represents new horizons in chemistry towards a science of informed and organized matter.