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Testing the Reliability of the Self-complementary Noncovalent Interactions: Supramolecular Implications and Supramolecular Design. Catalina Ruiz-Pérez, Laboratorio de Rayos X y Materiales Moleculares, Dept. de Física Fundamental II, Univ. de La Laguna, La Laguna (Tenerife), Spain, caruiz@ull.es.

Noncovalent interactions play a special role in supramolecular chemistry, which has been defined by Lehn [1] as "chemistry beyond the molecule". Noncovalently assisted synthetic procedures are used to assemble various types of supramolecular species. These syntheses rely on the stabilization provided by noncovalent interactions between recognition sites incorporated within precursors. As a recognition motif utilized to guide the synthesis, various types of noncovalent interactions can be used. These are, specifically, hydrogen bonds (Hbonds), stacking interactions, electrostatic interactions, hydrophobic interactions, charge-transfer interactions, and metal coordination [2].
Unconventional polymers composed of covalent and noncovalent bonds differ framatically from standard, conventional polymers with just covalent bonds. They posses novel physical, optical, electrochemical, photochemical, biological, and catalytic properties.

Targeted synthesis of macro- and supramolecular structures of various sizes, shapes, and functionality has now become possible. Supramolecular chemitry offers incredible applications in various fields such as medical chemistry (drug delivery systems), host-guest chemistry, catalysis and molecular electronics.

[1] Lehn J.-M., Angew. Chem., Int. Ed. Engl., 1988, 27, 89, ibid. 1990, 29, 1304.
[2] Lehn J.-M., Atwood J. L., Davies J. E. D., MacNicol D. D., Vögtle F., Comprehensive Supramolecular Chemistry, Eds. Pergamon, Oxford, 1996.