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Salle Mathis du bâtiment 2R1

Dr. Sébastien ULRICH

Institut des Biomolécules Max Mousseron
(IBMM) – CNRS, UM, ENSCM UMR 5247, Montpellier
sebastien.ulrich@enscm.fr

A DYNAMIC COVALENT CHEMISTRY APPROACH TO SELF-ASSEMBLING, DYNAMIC, AND ADAPTIVE RECOGNITION SYSTEMS

Contact : Y. Génisson, 05 61 55 62 99, genisson@chimie.ups-tlse.fr

A DYNAMIC COVALENT CHEMISTRY APPROACH TO SELF-ASSEMBLING, DYNAMIC, AND ADAPTIVE RECOGNITION SYSTEMS

Sébastien ULRICH,[1]

[1]*IBMM, Université de Montpellier, CNRS, ENSCM, UM, Montpellier, France*
sebastien.ulrich@enscm.fr

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Summary: Dynamic covalent chemistry (DCC)[1-2] has recently emerged as an innovative approach for the self-assembly of multicomponent biomolecular systems that display dynamic and adaptive features.
In this presentation I will show how responsive fluorescent nano-cages can be self-produced through a set of two orthogonal dynamic covalent reactions.[3-4] I will also summarize our results on the implementation of DCC for the generation of smart recognition and delivery systems for gene delivery applications,[5] and I will particularly describe three examples of dynamic materials (peptide-supported nanoconstructs,[6-7] dynamic biopolymers,[8-9] coordination clusters[10]) that were generated through DCC and that dynamically express the multivalent binding of DNA/RNA. The results show that these systems are adaptive and responsive to physico-chemical stimuli, thereby opening new avenues for the generation of "smart" gene delivery vectors.

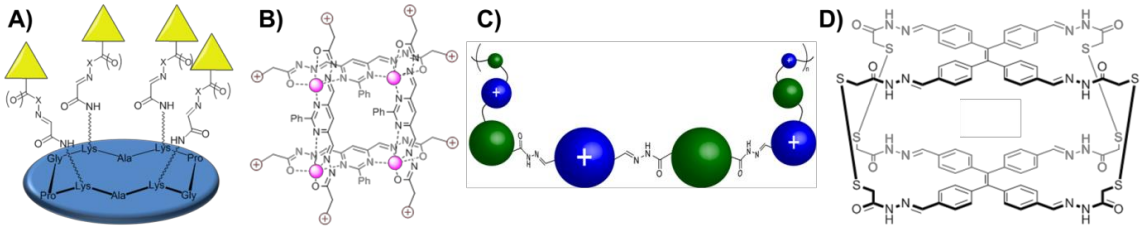

Fig. 1 Examples of A) peptide-based clusters, B) coordination clusters, C) dynamic covalent polymers, and D) aromatic nano-cages that were generated by dynamic covalent chemistry.

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