

Clip-off Chemistry: breaking bonds, building chemistry

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Historically, innovations in synthetic methods and chemical reactions have transformed how scientists design and synthesize molecules and materials. Indeed, novel reactions or synthetic strategies not only enable access to previously unattainable structures but also inspire new paradigms for constructing materials that address global social, economic, and industrial challenges.

In this talk, I will introduce the concept and recent advances in Clip-off Chemistry. This approach is based on the design and synthesis of novel molecules and materials with well-defined compositions and structures via bond cleavage within molecular frameworks. Clip-off Chemistry thus represents a new synthetic methodology in which programmed, selective disassembly leads to the formation of new molecules and materials. This molecular disassembly is achieved through chemical reactions; in a first approach, via ozonolysis, which enables the cleavage of organic building blocks or linkers through direct breaking of alkene or alkyne bonds. I will present the fundamental principles of Clip-off Chemistry and recent examples of molecules and structures obtained through controlled bond fission in porous reticular materials.