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ABSTRACT BOOK

Kinetic Control of Complexity in Multiple Dynamic Libraries

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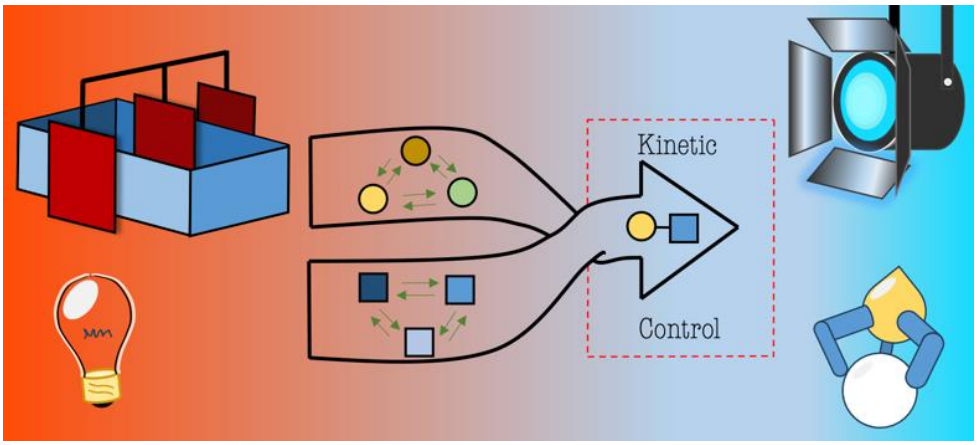
Dynamic Covalent Chemistry (DCvC) has become a powerful tool for supramolecular chemistry, particularly to generate sophisticated hosts such as macrocycles and cages, and also due to its ability to create complexity as libraries of compounds.[1] DCvC is based on reversible covalent chemistry, and therefore, the components of a library can interconvert by exchanging building blocks within such library, constituting a dynamic molecular network, in which the composition is traditionally governed by thermodynamics. DCvC is rarely combined with irreversible reactions except for those occasions in which cancelling the dynamics, to isolate stable compounds, is the objective. And yet, the combination of complexity generated by dynamic libraries, with an eventual simplification or manipulation by kinetically controlled process, offers an optimal pathway to mimic the intricate chemical schemes of biological systems.[2] Herein we have taken advantage of the dynamic nucleophilic substitution of tetrazines,[3,4,5] to generate supramolecular systems and to kinetically control them: A stable molecular system with specific host-guest and fluorescence properties, can be irreversibly transformed by the right stimulus into a completely different system, and concomitantly, the original properties are cancelled, and new ones emerged.[6]



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