Published online by the VBRI Press

Stereoselective catalytic in-flow synthesis of chiral molecules

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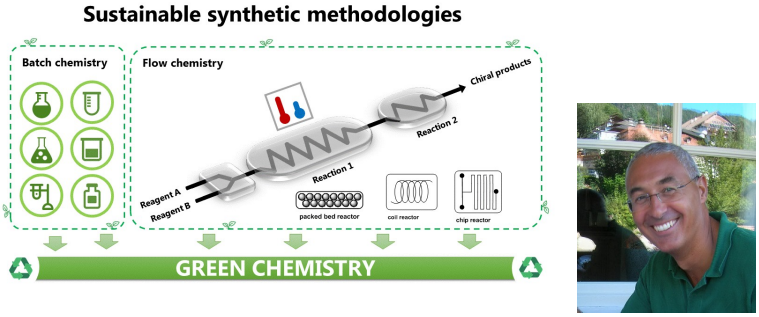

Abstract

Continuous-flow systems have emerged as a powerful technology for performing chemical transformations and have recently attracted attention also for the preparation of chiral APIs (active pharmaceutical ingredients).[1]

Recently developed stereoselective transformations performed in chiral organocatalytic reactors under continuous flow conditions will be presented. Both packed-bed and monolithic reactors, either made by silica and/or organic polymers, have been successfully used in metal-free reactions promoted by immobilized enantiopure primary or secondary amines.[2]
The possibility to perform organocatalytic reactions in (micro)-mesoreactors and to synthesize in flow-mode chiral intermediates of pharmaceutical interest will be also discussed.[3]

On the other hand, 3D-printing technology allows chemists to build devices with high precision and well-defined architecture. Stereoselective catalytic in-flow reactions in 3D-printed reactors will be also briefly highlighted.[4]
The combination of these two only partially explored technologies in stereoselective organic synthesis opens new and intriguing possibilities; the fabrication of *ad hoc* designed reactors and other devices, to perform at best different reactions becomes now feasible and gives new impulse to the use of enabling technologies in the synthesis of complex molecules.[5]

Keywords: organocatalysis; flow chemistry; stereoselectivity; chiral pharmaceutical compounds; microreactors.

MB thanks Università degli Studi di Milano and Regione Lombardia for a POR-FESR grant.

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