

A scalable dynamic cascade flow reactor for challenging continuous heterogeneous processes

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We herein present our work on the development, characterization (residence time distribution, heat transfer) and application tests of a flow reactor equipped with a dynamic mixer (DCR - Dynamic Cascade Reactor), which was designed for continuous processes that require handling of solids/fouling as well as reactions requiring long residence times. The reactor acts as a 12 CSTR cascade and can be used for a wide range processes with a focus on multiphase reactions.

To illustrate the reactor's ability to handle solids in suspension, Grignard reagents were synthesized in continuous flow from magnesium powder suspended in the reactor. The reactor is particularly well suited for this application as the reactor can be used in batch mode to perform the initial magnesium activation prior to starting the continuous process, thus ensuring that the reaction then takes place smoothly in flow.

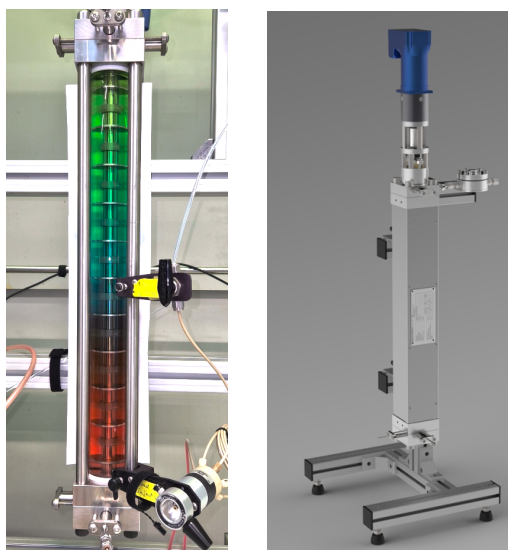


Figure 1. Dynamic Contiplant Reactor from Fluitec mixing + reaction solutions AG

[1] Plutschack, M. B.; Pieber, B.; Gilmore, K.; Seeberger, P. H. *Chem. Rev.* **2017**, *117* (18), 11796–11893.