

Heterogeneous enzyme processes - reactors design

D. Stradomska¹, A. Łochowicz¹, A. Jarzębski², R. Kubica¹, U. Hanefeld³,
K. Szymańska¹

¹Silesian University of Technology, Strzody 7, 44-100 Gliwice, Poland

²Institute of Chemical Engineering, PAS, Bałtycka 5, 44-100 Gliwice, Poland

³Delft University of Technology, Van der Maasweg 9, 2629 HZ Delft, The Netherlands.

Katarzyna.Szymanska@polsl.pl

Since enzymes are by nature very active catalysts, their use in processes requires effective mass and heat transfer. This requires the design of suitable reactors. A basic distinction is made between batch reactors and continuous flow reactors. Nevertheless each of them should ensure protection of the immobilised biocatalyst from mechanical damage, in addition to effective mass and heat transfer [1, 2].

Here we present the possibility of using silica monoliths with a hierarchical pore structure as enzyme supports and their application in flow systems (Fig. 1A) and in a reactor with a stationary catalyst bed, StatBioChem (Fig.1B). In the flow system the hierarchical pore structure allows efficient mixing of the reactants. Due to the pore size of the silica material (μm), it is also possible to use it effectively in basket reactors. The efficiency of the reactors will be presented using selected biotransformations as examples.

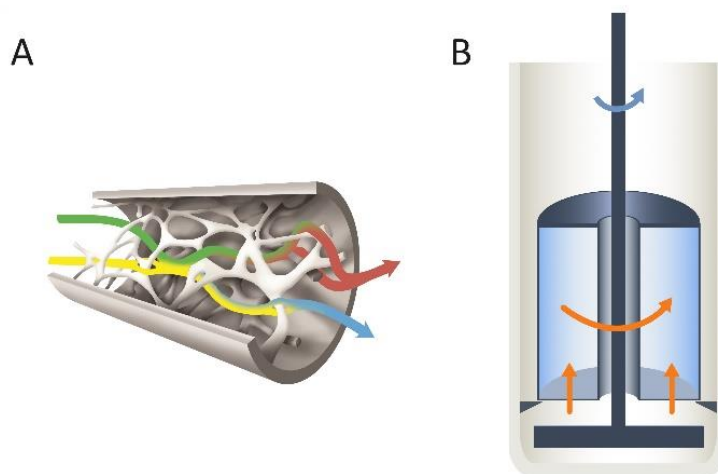


Figure 1. Scheme of continuous flow monolithic reactor (A) and StatBioChem reactor (B).

References

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