

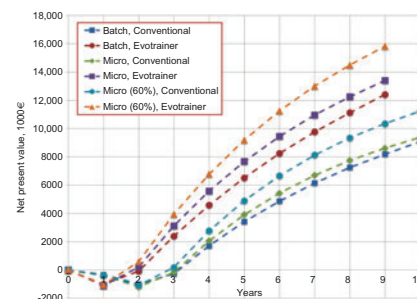
In this issue

Iris Vural Gürsel, Volker Hessel, Qi Wang, Timothy Noël and Jürgen Lang
Window of opportunity – potential of increase in profitability using modular compact plants and micro-reactor based flow processing

DOI 10.1515/gps-2012-0046
 Green Process Synth 2012; 1: 315–336

Original article: A cash-flow analysis reveals the theoretical economic potential of a new compact, modular plant infrastructure, the Evotrainer, for three application fields such as bulk chemistry, fine chemistry, and pharmacy.

Keywords: micro process technology; modular plants; net present value.



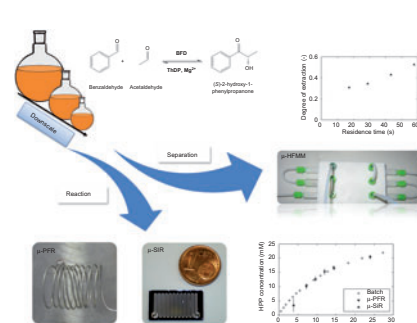
Janosch Fagaschewski, Sven Bohne, Dennis Kaufhold, Jörg Müller and Lutz Hilterhaus

Modular micro reaction engineering for carboligation catalyzed by benzoylformate decarboxylase

DOI 10.1515/gps-2012-0013
 Green Process Synth 2012; 1: 337–344

Original article: Downscale of the BFD-catalyzed carboligation: Reaction in μ -PFR (plug flow reactor) and μ -SIR (silicon reactor) as well as separation in μ -HFMM (hollow fibre membrane module).

Keywords: biocatalysis; downscale; enzyme; membrane; screening.



Elisabeth Brandes, Markus Gödde and Werner Hirsch

Detonation parameters: a basis for the design of microstructured process equipment

DOI 10.1515/gps-2012-0015
 Green Process Synth 2012; 1: 345–352

Original article: It is possible to derive a ‘safe capillary diameter’ from the correlation of the detonation cells width with the initial pressure by the use of the ‘ $\lambda/3$ -rule’ which is necessary with gasphase oxidation reactions when oxidizers with enhanced oxidation potential as well as high pressures and temperatures are used, because in such cases microstructured process equipment is not intrinsically safe.

Keywords: detonation parameters; equipment design; microstructured process; safe capillary diameter.



Isao Kobayashi, Marcos A. Neves, Yoshihiro Wada, Kunihiko Uemura and Mitsutoshi Nakajima
Large microchannel emulsification device for mass producing uniformly sized droplets on a liter per hour scale

DOI 10.1515/gps-2012-0023
 Green Process Synth 2012; 1: 353–362

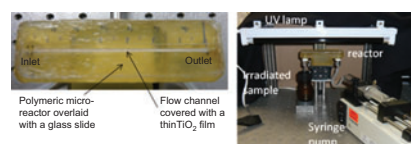
Original article: Uniformly sized oil-in-water emulsion droplets were mass-produced on a liter-per-hour scale using a large microchannel emulsification device developed in this study, which could satisfy a minimum industrial-scale production of monodisperse microdispersions.
Keywords: asymmetric microchannel; droplet generation; mass production; microchannel emulsification; monodisperse emulsion.



Guillaume Charles, Thibault Roques-Carmes, Nidhal Becheikh, Laurent Falk and Serge Corbel
Impact of the design and the materials of rectangular microchannel reactors on the photocatalytic decomposition of organic pollutant

DOI 10.1515/gps-2012-0022
 Green Process Synth 2012; 1: 363–374

Original article: The objective of this article is to find the optimal design of rectangular micro-channel reactors, in terms of reactor dimensions and materials, in order to increase the photocatalytic activity. Micro-channel reactors with immobilized titanium dioxide as photocatalyst have been designed, fabricated and tested.
Keywords: aluminum; microchannel reactor; photocatalysis; stereolithography; titanium dioxide.



Eva Zschieschang, Peter Pfeifer and Liselotte Schebek
Environmentally optimized microreactor design through Life Cycle Assessment

DOI 10.1515/gps-2012-0026
 Green Process Synth 2012; 1: 375–384

Original article: We apply Modular Server-Client-Server methodology to combine microreactor design with Life Cycle Assessment to evaluate critical design parameters and fabrication methods with respect to global warming potential in the early R&D phase of microreactor development.
Keywords: Life Cycle Assessment; microreactor design; Modular Server-Client-Server methodology; optimization.

