

In this issue

Simon Schulze, Bruno Cortese, Matthias Rupp, Mart H.J.M. de Croon, Volker Hessel, Julien Couet, Jürgen Lang and Elias Klemm

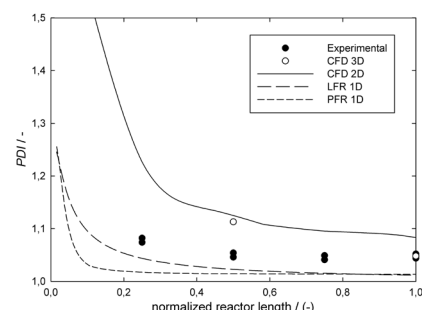
Investigations on the anionic polymerization of butadiene in capillaries by kinetic measurements and reactor simulation

DOI 10.1515/gps-2013-0059

Green Process Synth 2013; 2: 381–395

Original article: Investigation of polydispersity index (PDI) in a capillary with models and experiments.

Keywords: 1,3-butadiene; intrinsic kinetics; living anionic; microreactor; polydispersity; polymerization; process intensification.



Samir Bensaid, Dung Hoang, Pierluigi Bellantoni and Guido Saracco

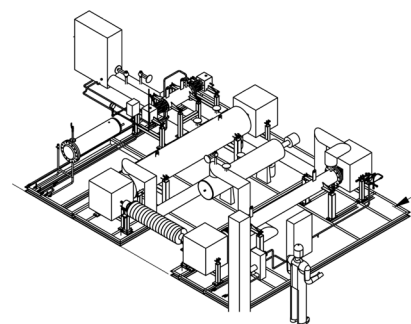
Supercritical fluid technology in biodiesel production: pilot plant design and operation

DOI 10.1515/gps-2013-0065

Green Process Synth 2013; 2: 397–406

Original article: A pilot scale plant for the continuous production of biodiesel in supercritical conditions was designed, manufactured and operated.

Keywords: biodiesel; catalyst; non-catalytic; supercritical fluid; transesterification.



Dung Hoang, Samir Bensaid and Guido Saracco

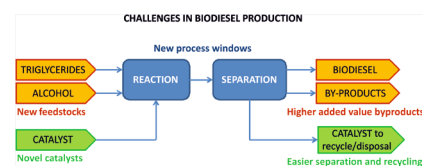
Supercritical fluid technology in biodiesel production

DOI 10.1515/gps-2013-0046

Green Process Synth 2013; 2: 407–425

Review: This review article illustrates all current challenges in biodiesel production: from the use of diverse and green raw materials, to the widening of the process windows, thanks to innovative catalysts or through the use of supercritical conditions, until the production of byproducts with a higher-added value than glycerin.

Keywords: biodiesel; catalyst; non-catalytic; supercritical fluid; transesterification.

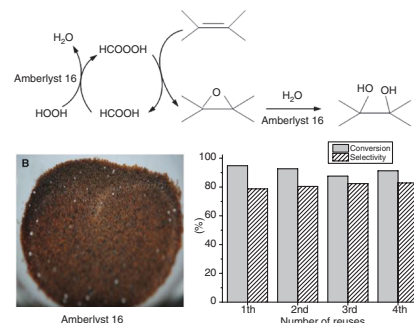


Rosa Turco, Rosa Vitiello, Vincenzo Russo, Riccardo Tesser, Elio Santacesaria and Martino Di Serio
Selective epoxidation of soybean oil with performic acid catalyzed by acidic ionic exchange resins

DOI 10.1515/gps-2013-0045
 Green Process Synth 2013; 2: 427–434

Original article: Amberlyst 16 has good activity and selectivity in soybean oil epoxidation process and high resistance to physical and chemical degradation.

Keywords: acid resins; epoxidation; soybean oil.

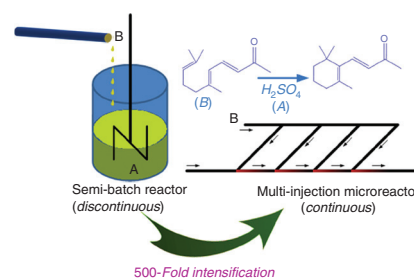


Julien Haber, Bo Jiang, Thomas Maeder, Albert Renken and Liubov Kiwi-Minsker
Multi-injection microstructured reactor for intensification of fast exothermic reactions: proof of concept

DOI 10.1515/gps-2013-0060
 Green Process Synth 2013; 2: 435–449

Original article: The continuous multi-injection micro-structured reactor has been developed for performing highly exothermic and fast cyclisation of pseudoionone without hot-spots formation and allowing 500-fold process intensification as compared to the conventional semi-batch operation.

Keywords: exothermic; microstructured reactor; multi-injection; pseudoionone; temperature.

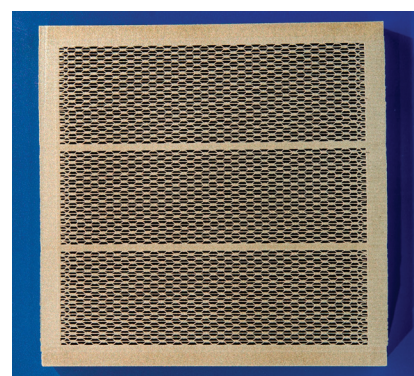


Ulrich Krtschil, Christian Hofmann, Patrick Löb, Christian Schütt, Peter Schorcht and Michael Streuber
Novel manufacturing techniques for microstructured reactors in industrial dimensions

DOI 10.1515/gps-2013-0066
 Green Process Synth 2013; 2: 451–463

Original article: Cross cut view after vacuum brazing of a stacked plate microreactor made by using novel manufacturing techniques, like microstructuring of metal strips by using roll embossing.

Keywords: industrial scale; laser welding; microstructured reactor; roll embossing; vacuum brazing.

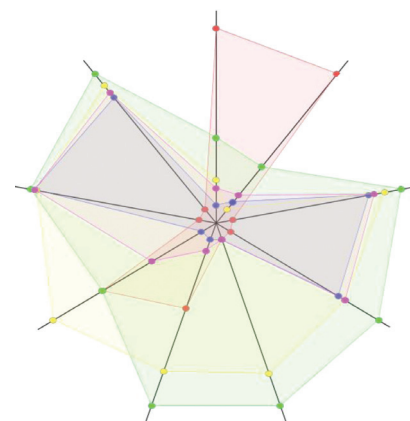


Dana Kralisch, Denise Ott, Sabine Kressirer, Christin Staffel, Ina Sell, Ulrich Krtischil and Patrick Loeb
Bridging sustainability and intensified flow processing within process design for sustainable future factories

DOI 10.1515/gps-2013-0058
 Green Process Synth 2013; 2: 465–478

Original article: Multi-criteria decision support for environmentally benign and cost efficient process design strategies in front of a scale-up of newly developed concepts is discussed by means of three case studies.

Keywords: decision support; eco-efficiency; life cycle assessment; life cycle costing; process intensification.

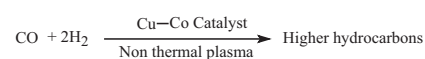


Wail S.S. Al-Harrasi, Kui Zhang and Galip Akay
Process intensification in gas-to-liquid reactions: plasma promoted Fischer-Tropsch synthesis for hydrocarbons at low temperatures and ambient pressure

DOI 10.1515/gps-2013-0067
 Green Process Synth 2013; 2: 479–490

Original article: In the intensification of Fischer-Tropsch synthesis using catalytic plasma, it was found that, contrary to the thermodynamics of the conventional reaction, lower pressures resulted in higher conversions indicating a different reaction pathway and significance of efficient plasma generation at lower pressures.

Keywords: catalysts; dielectric-barrier discharge; Fischer-Tropsch synthesis; gas-to-liquid conversion; process intensification.

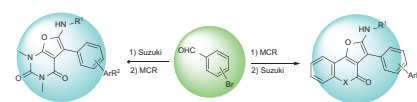


Asha Kadam, Stephanie Bellinger and Wei Zhang
Atom- and step-economic synthesis of biaryl-substituted furocoumarins, furoquinolones and furopyrimidines by multicomponent reactions and one-pot synthesis

DOI 10.1515/gps-2013-0064
 Green Process Synth 2013; 2: 491–497

Original article: Atom-efficient multicomponent reactions and step-efficient one-pot synthesis are developed for the synthesis of biaryl-substituted furocoumarins, furoquinolones, and furopyrimidines.

Keywords: atom economy; furocoumarin; furopyrimidine; furoquinolone; multicomponent reaction; one-pot synthesis; step economy.



Yongli Li, Iris Gerken, Andreas Hensel, Manfred Kraut and Jürgen J. Brandner

Development of a continuous emulsification process for a highly viscous dispersed phase using microstructured devices

DOI 10.1515/gps-2013-0063

Green Process Synth 2013; 2: 499–507

Original article: Oil (or Oil-emulsifier mixture) is first heated by the microstructured heat exchanger (μ HX), then it is mixed with water-emulsifier mixture (or water) in the microstructured mixer (μ Mixer) to produce oil-in-water emulsions.

Keywords: droplet size distribution; emulsion; microstructured heat exchanger; microstructured mixer; viscosity.

