In this issue

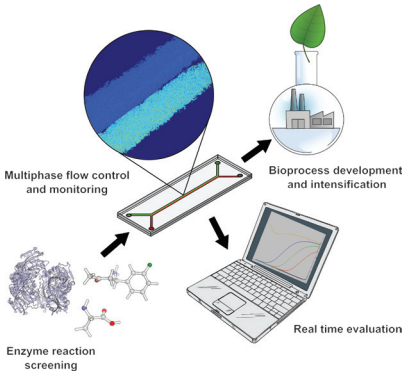
Juan M. Bolivar and Bernd Nidetzky

Multiphase biotransformations in microstructured reactors: opportunities for biocatalytic process intensification and smart flow procecessing

DOI 10.1515/gps-2013-0091
Green Process Synth 2013; 2: 541–559

Review: Multiphase biotransformations in microstructured flow reactors provide unique opportunities for biocatalytic process intensification and smart flow processing, as revealed in recent examples from fine chemical and materials syntheses that are reviewed in this article.

Keywords: biocatalysis; flow synthesis; microchannel; multi-phase flow; process intensification.



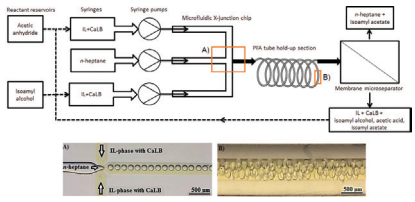
Uroš Novak and Polona Žnidaršič-Plazl

Integrated lipase-catalyzed isoamyl acetate synthesis in a miniaturized system with enzyme and ionic liquid recycle

DOI 10.1515/gps-2013-0082
Green Process Synth 2013; 2: 561–568

Original article: Microdroplet-based microreactor was used for a lipase-catalyzed isoamyl acetate synthesis within ionic liquid/*n*-heptane two-phase system and integrated with a membrane microseparator, which enabled phase separation and recycling of solvent with biocatalyst.

Keywords: esterification; ionic liquid; lipase B; microreactor; process integration.



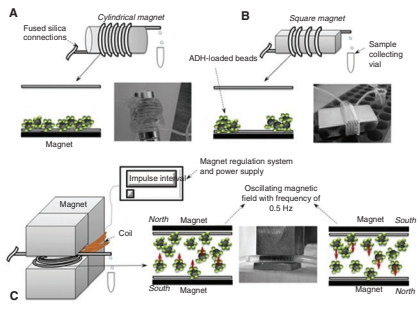
Anita Šalić, Katarina Pindrić, Gordana Hojnik Podrepšek, Maja Leitgeb and Bruno Zelić

NADH oxidation in a microreactor catalysed by ADH immobilised on γ-Fe_2O_3 nanoparticles

DOI 10.1515/gps-2013-0084
Green Process Synth 2013; 2: 569–578

Original article: Coenzyme regeneration was performed using ADH-loaded magnetic nanoparticles in three different reactor configurations.

Keywords: alcohol dehydrogenase; coenzyme regeneration; enzyme immobilisation; microreactor; maghemite nanoparticle.



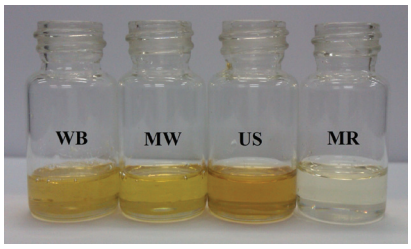
Marina Cvjetko Bubalo, Izidor Sabotin, Ivan Radoš, Joško Valentinčič, Tomislav Bosiljkov, Mladen Brnčić and Polona Žnidaršič-Plazl

A comparative study of ultrasound-, microwave-, and microreactor-assisted imidazolium-based ionic liquid synthesis

DOI 10.1515/gps-2013-0086
Green Process Synth 2013; 2: 579–590

Original article: A comparative study of ultrasound, microwave, and microreactor-assisted solvent-free synthesis of imidazolium-based ionic liquid revealed that continuous process within a microreactor system could be selected as the most promising one in terms of possible industrial application.

Keywords: ionic liquids; microreactor; microwave irradiation; solvent-free synthesis; ultrasound.



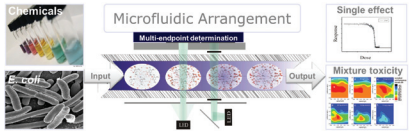
Jialan Cao, Juliane Goldhan, Karin Martin and J. Michael Köhler

Investigation of mixture toxicity of widely used drugs caffeine and ampicillin in the presence of an ACE inhibitor on bacterial growth using droplet-based microfluidic technique

DOI 10.1515/gps-2013-0078
Green Process Synth 2013; 2: 591–601

Original article: Uncovering toxicological complexity by multi-dimensional screenings using droplet-based microfluidic technique.

Keywords: ACE inhibitor captopril; antibiotic ampicillin; combinatorial effects; droplet-based microfluidic technique; mixture toxicity.



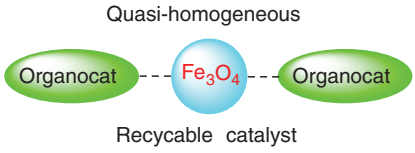
Yibo Huang and Wei Zhang

Magnetic nanoparticle-supported organocatalysis

DOI 10.1515/gps-2013-0076
Green Process Synth 2013; 2: 603–609

Review: Synthesis and application of Fe_3O_4 magnetic nanoparticle-supported organocatalysts for asymmetric synthesis and catalyst recovery are highlighted.

Keywords: asymmetric synthesis; catalyst recovery; Fe_3O_4 magnetic nanoparticles; green chemistry; supported organocatalysis.



Chuntian Hu, Carina Herz and Ryan L. Hartman

Microfluidic dispersion of mineral oil-seawater multiphase flows in the presence of dialkyl sulfonates, polysorbates, and glycols

DOI 10.1515/gps-2013-0085
Green Process Synth 2013; 2: 611–623

Original article: Microfluidics are useful laboratory devices for discovering the dispersant mass required to transition from mineral oil-seawater multiphase segmented flow to the bubbly flow regime, which potentially minimizes the mass of oil spill remediation dispersants introduced into marine environments.

Keywords: dispersants; marine; microfluidic; oil spill remediation; residence time distributions.