In this issue

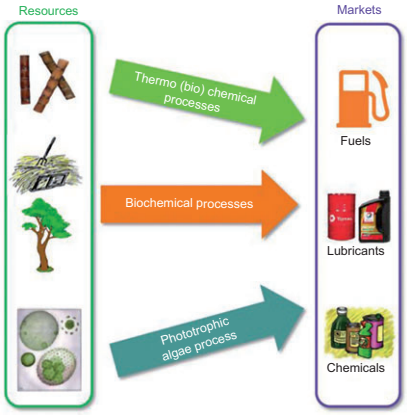
Francis Luck

An overview of Total's activities on alternative energies, advanced biofuels and bioproducts for energy efficiency and environmental acceptability

DOI 10.1515/gps-2012-0051
Green Process Synth 2012; 1: 409–416

Essay: Development of new forms of energy (biofuels, dimethylether, solar, ...) and eco-efficient products and services by Total, to meet the energy demand while reducing CO_2 emissions.

Keywords: biomass; biotechnologies; eco-efficient products and services; fossil fuels; renewable energies.



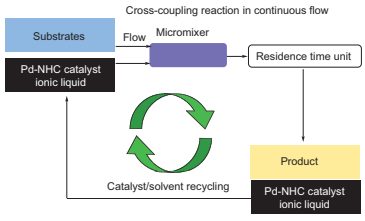
Takahide Fukuyama and Ilhyong Ryu

Benchtop factory for cross-coupling reactions by circulatory catalyst flow using low viscosity ionic liquid as reaction medium and catalyst support

DOI 10.1515/gps-2011-0008
Green Process Synth 2012; 1: 417–426

Review: This article describes the development of circulatory catalyst flow system for Pd-catalyzed cross-coupling reactions, such as Mizoroki-Heck reaction and Sonogashira reaction, in which low viscosity ionic liquids such as [bmim]NTf_2 and [emim]NTf_2 were used as recyclable reaction medium and catalyst support. Bench-top production system consisting of flow reactor (micromixer plus residence time unit), dual extraction unit with two T-shaped micromixers, and catalyst/solvent pumping back system is designed and used for the synthesis of 100 g order of cross-coupling products.

Keywords: bench top factory; catalyst recycling; cross-coupling reaction; flow chemistry; ionic liquid; microreactor.

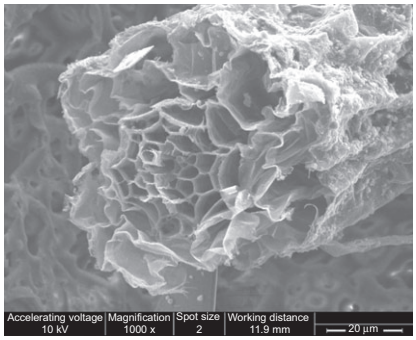


Galip Akay and Steven Fleming

Agro-process intensification: soilborne micro-bioreactors with nitrogen fixing bacterium *Azospirillum brasilense* as self-sustaining biofertiliser source for enhanced nitrogen uptake by plants

DOI 10.1515/gps-2012-0041
Green Process Synth 2012; 1: 427–437

Original article: A new application of agro-process intensification is described in which the interactions between plant roots, root exudates, water, nutrients and nitrogen fixing bacteria are enhanced within the pores of highly hydrophilic polyHIPE polymer leading to enhancement of biomass (grass) yield in greenhouse experiments as a result of self-sustaining production of biofertiliser within the bio-microreactors used as soil additives.
Keywords: agro-process intensification; *Azospirillum brasilense*; biofertilisers; nitrogen fixation; polyHIPE polymers.

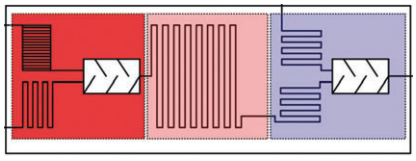


Holger Löwe, Gong Wei, Ma Jiang, Christian Hofmann, Hans-Joachim Kost and Christian Schütt

Multi-step processing in a microstructured flow reactor: direct nitration of propane – a proof of principle

DOI 10.1515/gps-2012-0054
Green Process Synth 2012; 1: 439–448

Original article: The nitration of propane with evaporated nitric acid was carried out at 380°C to 450°C in a multi-step stainless steel micro reactor.
Keywords: gas-phase; micro reactor; nitration; nitro alkanes.

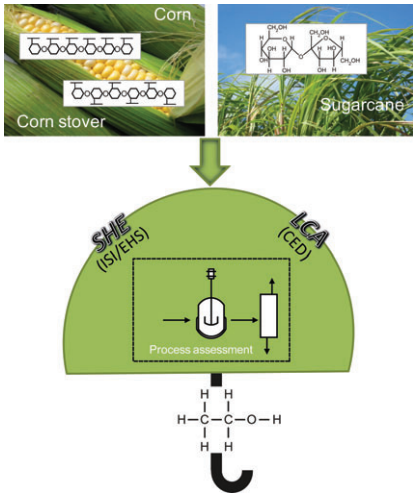


Alireza Banimostafa, Thuy Thi Hong Nguyen, Yasunori Kikuchi, Stavros Papadokonstantakis, Hirokazu Sugiyama, Masahiko Hirao and Konrad Hungerbühler

Safety, health and environmental assessment of bioethanol production from sugarcane, corn and corn stover

DOI 10.1515/gps-2012-0042
Green Process Synth 2012; 1: 449–461

Original article: Bioethanol production as an option to meet the challenges of fossil fuel resource depletion and atmospheric pollution needs to undergo a comprehensive multi-criteria sustainability assessment including both the impact of normal operation (i.e., through Life Cycle Assessment) and the potential of accidental scenarios (i.e., hazard assessment).
Keywords: biofuels; hazard assessment methods; inherent safety index; lignocellulosic biomass; sustainable production processes.



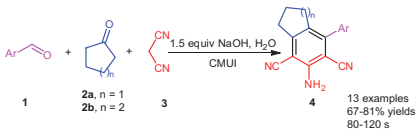
Huangdi Feng, Shengjie Lin, Jiayi Wang, Gonghua Song and Yanqing Peng

Aqueous heterogeneous synthesis of polysubstituted 2,6-dicyanoanilines via combined microwave and ultrasound-assisted multicomponent reaction

DOI 10.1515/gps-2012-0052
Green Process Synth 2012; 1: 463–468

Original article: A green approach to a series of polysubstituted 3-aryl-2,6-dicyanoanilines derivatives via aqueous multicomponent reacton of an aromatic aldehyde, a malononitrile and a cyclic ketone under combined microwave and ultrasound irradiation

Keywords: 2,6-dicyanoanilines; microwave; multicomponent reaction; ultrasound; water.



Harshita Sachdeva, Rekha Saroj, Sarita Khaturia and Diksha Dwivedi

Operationally simple green synthesis of some Schiff bases using grinding chemistry technique and evaluation of antimicrobial activities

DOI 10.1515/gps-2012-0043
Green Process Synth 2012; 1: 469–477

Original article: Operationally simple condensation of DL-Alanine amino acid (1) with substituted aromatic aldehydes/heterocyclic aldehyde (2) occurs to afford Schiff bases in quantitative yield under organic solvent-free conditions efficiently in the presence of water as a green solvent using “Grindstone Chemistry Technique.”

Keywords: antibacterial activity; antifungal activity; green solvent; grindstone technology; microwave irradiation; Schiff bases.