

## In this issue

Ma'moun Al-Rawashdeh, Bassam Alfeeli, Abdel Monem Rawashdeh and Volker Hessel

### Development highlights of micro-nano technologies in the MENA region and pathways for initiatives to support and network

DOI 10.1515/gps-2013-0012  
Green Process Synth 2013; 2: 91–100

**Original article:** The scientific outcome and existing initiatives to develop micro-nano technologies from the Middle East and North Africa (MENA) region are highlighted with a suggestion to create a platform and a road map to boost the development in that region.



**Keywords:** Arab world; micro-technology; Middle East; nano-technology; road map.

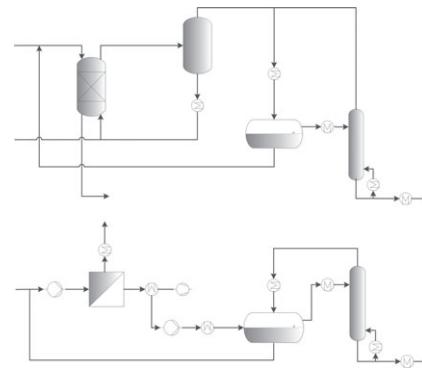
Martin Stoffers, Sebastian Heitmann, Philip Lutze and Andrzej Górkak

### Integrated processing for the separation of biobutanol. Part A: experimental investigation and process modelling

DOI 10.1515/gps-2013-0009  
Green Process Synth 2013; 2: 101–120

**Original article:** Alternative separation processes for the recovery of *n*-butanol from aqueous streams, including distillation, extraction and pervaporation, are discussed and analysed on detailed economics.

**Keywords:** biobutanol; extraction; ionic liquid; pervaporation; process analysis.



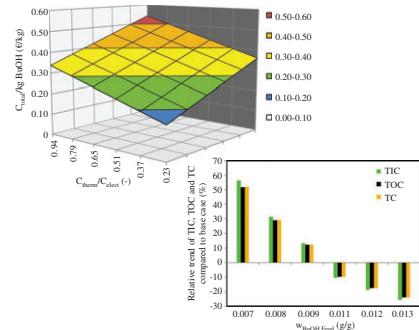
Sebastian Heitmann, Martin Stoffers and Philip Lutze

### Integrated processing for the separation of biobutanol. Part B: model-based process analysis

DOI 10.1515/gps-2013-0021  
Green Process Synth 2013; 2: 121–141

**Original article:** The separation of *n*-butanol from aqueous media using distillation, extraction and pervaporation is analysed on detailed economics, including the influence of the uncertainty of the used model parameters and the sensitivity of the production costs to model parameters, assumptions and design variables.

**Keywords:** biobutanol; extraction; ionic liquid; pervaporation; process analysis.

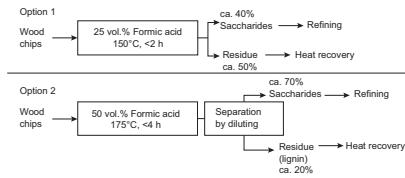


Isao Hasegawa, Teng Hong Khoo and Kazuhiro Mae  
**Direct saccharification of lignocellulosic biomass by hydrolysis with formic acid solution**

DOI 10.1515/gps-2012-0090  
 Green Process Synth 2013; 2: 143–149

**Original article:** We proposed the two methods in which 40 wt% of water-soluble saccharides are obtained with formic acid solution suppressing lignin elution, or most of the biomass is solubilized before the lignin separation.

**Keywords:** formic acid; hydrolysis; lignocellulosic biomass; saccharification.

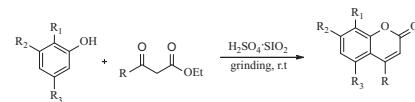


Dinesh Sharma and Surender Kumar  
**A facile synthesis of 2*H*-chromen-2-ones via Pechmann condensation under solvent free conditions using grinding technique**

DOI 10.1515/gps-2012-0068  
 Green Process Synth 2013; 2: 151–155

**Original article:** The synthesis of 2*H*-chromen-2-ones has been described in good yields via von Pechmann condensation, in the presence of silica supported sulfuric acid, using the grinding technique.

**Keywords:** 2*H*-chromen-2-ones; grinding technique; silica supported sulfuric acid; solvent free condition; von Pechmann condensation.



Alexander Holbach and Norbert Kockmann  
**Counter-current arrangement of microfluidic liquid-liquid droplet flow contactors**

DOI 10.1515/gps-2013-0006  
 Green Process Synth 2013; 2: 157–167

**Original article:** This novel liquid-liquid contacting unit consists of a droplet generator, a microchannel with intensified mass transfer between the two fluids and a liquid-liquid separation device and enables the counter-current arrangement of mass transfer steps for high separation efficiency.

**Keywords:** counter-current arrangement; downstream processing; microfluidic droplet flow; mixer-settler.

