

Chemical Engineering Journal 108 (2005) 279-282



www.elsevier.com/locate/cej

# Subject Index of Volume 108

Acceleration

Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101

Activated carbon

- Residual oil and suspended solid removal using natural adsorbents chitosan, bentonite and activated carbon: A comparative study, 179 Activation energy distributions
- An *n*th-order Gaussian energy distribution model for sintering, 47 Admicellar polymerization
  - Admicellar polymerization modified silica via a continuous stirred-tank reactor system: Comparative properties of rubber compounding, 213

## Air-activation

Preparation of carbon-based adsorbents from pyrolysis and air activation of sewage sludges, 169

# Ammonia oxidation

Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257 Anion

Extraction of arsenic-containing anions by supercritical  $\mathrm{CO}_2$  with ion-pairing, 145

#### Arsenic

Extraction of arsenic-containing anions by supercritical  $\rm CO_2$  with ion-pairing, 145

## Atomizer

Laser-based flow measurement in performance assessment of FCC atomizer, 109

## Bentonite

Residual oil and suspended solid removal using natural adsorbents chitosan, bentonite and activated carbon: A comparative study, 179 Benzene nitration

Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1

# Biomass

Low-temperature catalytic hydrothermal treatment of wood biomass: analysis of liquid products, 127

## Bubble columns

CFD simulation of steady state heat transfer in bubble columns, 117

## Carbon adsorbent

Preparation of carbon-based adsorbents from pyrolysis and air activation of sewage sludges, 169

CFD simulations

Scale up study of retreat curve impeller stirred tanks using LDA measurements and CFD simulation, 81

# CFD

CFD simulation of steady state heat transfer in bubble columns, 117 Chaos

The extended Kalman filter as a noise modulator for continuous yeast cultures under monotonic, oscillating and chaotic conditions, 91

# Chitosan

Residual oil and suspended solid removal using natural adsorbents chitosan, bentonite and activated carbon: A comparative study, 179 Combustion

Experimental investigation and particle dynamic simulation for synthesizing titania nanoparticles using diffusion flame, 203

Continuous culture

The extended Kalman filter as a noise modulator for continuous yeast cultures under monotonic, oscillating and chaotic conditions, 91

# Copper oxide

## Deactivation

Deactivation and regeneration of TS-1/diatomite catalyst for hydroxylation of phenol in fixed-bed reactor, 187

#### Debarking

Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101

# Degradation

Degradation of linuron in aqueous solution by the photo-Fenton reaction, 269

## Design

CFD simulation of steady state heat transfer in bubble columns, 117 Diffusion flame

Experimental investigation and particle dynamic simulation for synthesizing titania nanoparticles using diffusion flame, 203

## Dilute gas-solid flow

Characterizing particle clustering behavior by PDPA measurement for dilute gas-solid flow, 193

## Discriminant analysis

Regime transition in a gas-liquid-solid fluidized bed, 35

Down-flow reactor

Experimental study of particle flow in a gas-solid separator with baffles using PDPA, 59

## Extended Kalman filter

The extended Kalman filter as a noise modulator for continuous yeast cultures under monotonic, oscillating and chaotic conditions, 91

## Extraction

Extraction of arsenic-containing anions by supercritical  $\rm CO_2$  with ion-pairing, 145

## Falling-film extractor

Flow and mass transfer characteristics in a falling-film extractor using hollow fiber as packing, 161

Film model

Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1

Cycling effects on the methane regeneration kinetics of CuO/γ-Al<sub>2</sub>O<sub>3</sub> sorbent, 227

Fixed-bed reactor Deactivation and regeneration of TS-1/diatomite catalyst for hydroxylation of phenol in fixed-bed reactor, 187 Flow characteristics Regime transition in a gas-liquid-solid fluidized bed, 35 Fluid catalytic cracking (FCC) Laser-based flow measurement in performance assessment of FCC atomizer, 109 Fluid mechanics CFD simulation of steady state heat transfer in bubble columns, 117 Fluidization Characterizing particle clustering behavior by PDPA measurement for dilute gas-solid flow, 193 Fluidized bed reactor Water purification in a fluidized bed photocatalytic reactor using TiO<sub>2</sub>coated ceramic particles, 155 Fructose syrup Optimal design and operation of SMB bioreactor for sucrose inversion, 19 Fuel cell Modeling of a compact plate-fin reformer for methanol steam reforming in fuel cell systems, 51 Gas-solid separator Experimental study of particle flow in a gas-solid separator with baffles using PDPA, 59 Genetic algorithm Optimal design and operation of SMB bioreactor for sucrose inversion, 19 Genetic algorithms Optimization of methanol synthesis reactor using genetic algorithms, 249 Heat transfer coefficient CFD simulation of steady state heat transfer in bubble columns, 117 Heterogeneous reaction Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1 Hollow fiber Flow and mass transfer characteristics in a falling-film extractor using hollow fiber as packing, 161 Hydrodynamics Studies on hydrodynamics of an internal-loop airlift reactor in gas entrainment regime by particle image analyzer, 69 Hydrogen peroxide Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101 Hydrolysis of sucrose Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Hydrothermal process Low-temperature catalytic hydrothermal treatment of wood biomass: analysis of liquid products, 127 Hydroxyapatite An nth-order Gaussian energy distribution model for sintering, 47 Hydroxylation of phenol Deactivation and regeneration of TS-1/diatomite catalyst for hydroxylation of phenol in fixed-bed reactor, 187 Inflow noise

The extended Kalman filter as a noise modulator for continuous yeast cultures under monotonic, oscillating and chaotic conditions, 91 Intermediate reaction regime

Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1

Internal-loop airlift reactor

Studies on hydrodynamics of an internal-loop airlift reactor in gas entrainment regime by particle image analyzer, 69

# Ion-pairing

Extraction of arsenic-containing anions by supercritical  $\mathrm{CO}_2$  with ion-pairing, 145

## Kinetics

An *n*th-order Gaussian energy distribution model for sintering, 47

Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101

Reaction pathways and product yields in mild thermal cracking of vacuum residues: A multi-lump kinetic model, 239

#### LDA measurements

Scale up study of retreat curve impeller stirred tanks using LDA measurements and CFD simulation, 81

# Linuron

Degradation of linuron in aqueous solution by the photo-Fenton reaction, 269

## Liquid-liquid reaction

Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1

Low Reynolds number model

CFD simulation of steady state heat transfer in bubble columns, 117

# Mass transfer

- Continuous adiabatic industrial benzene nitration with mixed acid at a pilot plant scale, 1
- Flow and mass transfer characteristics in a falling-film extractor using hollow fiber as packing, 161

# Mathematical modelling

CFD simulation of steady state heat transfer in bubble columns, 117

# Methane

- Cycling effects on the methane regeneration kinetics of CuO/γ-Al<sub>2</sub>O<sub>3</sub> sorbent, 227
- Methanol reactor

Optimization of methanol synthesis reactor using genetic algorithms, 249

#### Methanol synthesis

Optimization of methanol synthesis reactor using genetic algorithms, 249

# Methanol

- Modeling of a compact plate-fin reformer for methanol steam reforming in fuel cell systems, 51
- Mineralization

Degradation of linuron in aqueous solution by the photo-Fenton reaction, 269

# Modeling

An nth-order Gaussian energy distribution model for sintering, 47

Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101

## Modelling

Reaction pathways and product yields in mild thermal cracking of vacuum residues: A multi-lump kinetic model, 239

#### Modified silica

- Admicellar polymerization modified silica via a continuous stirred-tank reactor system: Comparative properties of rubber compounding, 213
- Multi-objective optimization

Optimal design and operation of SMB bioreactor for sucrose inversion, 19

#### Multiphase flow

Studies on hydrodynamics of an internal-loop airlift reactor in gas entrainment regime by particle image analyzer, 69

#### Nanoparticle

Experimental investigation and particle dynamic simulation for synthesizing titania nanoparticles using diffusion flame, 203 Nitrate reduction

- Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257 Noisy measurements
  - State estimation for nonlinear systems under model unobservable uncertainties: application to continuous reactor, 139
- Observer
  - State estimation for nonlinear systems under model unobservable uncertainties: application to continuous reactor, 139
- Optimization

Optimization of methanol synthesis reactor using genetic algorithms, 249

- Oscillations
- The extended Kalman filter as a noise modulator for continuous yeast cultures under monotonic, oscillating and chaotic conditions, 91
- Oxidative dehydrogenation of propane
  - The temperature-scanning plug flow reactor (TSPFR) applied to complex reactions—Oxidative dehydrogenation of propane as an example, 219
- Paired electrolysis
  - Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257
- Palm oil mill effluent
- Residual oil and suspended solid removal using natural adsorbents chitosan, bentonite and activated carbon: A comparative study, 179 Pareto set
- Pareto set
  - Optimal design and operation of SMB bioreactor for sucrose inversion, 19
- Particle cluster
  - Characterizing particle clustering behavior by PDPA measurement for dilute gas-solid flow, 193
- Particle dynamics
- Experimental investigation and particle dynamic simulation for synthesizing titania nanoparticles using diffusion flame, 203
- Particle flow
  - Experimental study of particle flow in a gas-solid separator with baffles using PDPA, 59
- Particle image analyzer
  - Studies on hydrodynamics of an internal-loop airlift reactor in gas entrainment regime by particle image analyzer, 69
- Particle size and velocity distribution
  - Laser-based flow measurement in performance assessment of FCC atomizer, 109
- PDPA
  - Experimental study of particle flow in a gas-solid separator with baffles using PDPA, 59
- PdRh<sub>15</sub> cathode
  - Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257
- PFA films

Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Phase Doppler particle analyzer

Characterizing particle clustering behavior by PDPA measurement for dilute gas-solid flow, 193

Phenol

- Flow and mass transfer characteristics in a falling-film extractor using hollow fiber as packing, 161
- Phenolic compounds

Low-temperature catalytic hydrothermal treatment of wood biomass: analysis of liquid products, 127

Photo-Fenton reaction

Degradation of linuron in aqueous solution by the photo-Fenton reaction, 269

Plate-fin reformer

- Modeling of a compact plate-fin reformer for methanol steam reforming in fuel cell systems, 51
- Pt anode
- Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257 Pyrolysis
  - Preparation of carbon-based adsorbents from pyrolysis and air activation of sewage sludges, 169
- Radiation-induced grafting
- Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Reaction kinetics
- Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Regeneration
  - Deactivation and regeneration of TS-1/diatomite catalyst for hydroxylation of phenol in fixed-bed reactor, 187
  - Cycling effects on the methane regeneration kinetics of  $CuO/\gamma$ -Al<sub>2</sub>O<sub>3</sub> sorbent, 227

# Residual oil

Residual oil and suspended solid removal using natural adsorbents chitosan, bentonite and activated carbon: A comparative study, 179

- Residues
  - Reaction pathways and product yields in mild thermal cracking of vacuum residues: A multi-lump kinetic model, 239

Retreat curve impeller

- Scale up study of retreat curve impeller stirred tanks using LDA measurements and CFD simulation, 81
- Robust performance
  - State estimation for nonlinear systems under model unobservable uncertainties: application to continuous reactor, 139
- Sauter mean diameter (SDM)

Laser-based flow measurement in performance assessment of FCC atomizer, 109

Scale up

- Scale up study of retreat curve impeller stirred tanks using LDA measurements and CFD simulation, 81
- Sewage sludge

Preparation of carbon-based adsorbents from pyrolysis and air activation of sewage sludges, 169

- Simulated moving bed
- Optimal design and operation of SMB bioreactor for sucrose inversion, 19
- Simulation
  - Modeling of a compact plate-fin reformer for methanol steam reforming in fuel cell systems, 51
- Sintering

An *n*th-order Gaussian energy distribution model for sintering, 47 Solar light

- Water purification in a fluidized bed photocatalytic reactor using TiO<sub>2</sub>coated ceramic particles, 155
- State estimation
  - State estimation for nonlinear systems under model unobservable uncertainties: application to continuous reactor, 139
- Steam reforming
  - Modeling of a compact plate-fin reformer for methanol steam reforming in fuel cell systems, 51

Styrene

- Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Sucrose inversion
- Optimal design and operation of SMB bioreactor for sucrose inversion, 19 Sufonic acid membranes
- Hydrolysis of sucrose by radiation grafted sulfonic acid membranes, 13 Supercritical carbon dioxide
  - Extraction of arsenic-containing anions by supercritical  $\rm CO_2$  with ion-pairing, 145

282

#### Taguchi analysis

- Laser-based flow measurement in performance assessment of FCC atomizer, 109
- Temperature-scanning plug flow reactor
  - The temperature-scanning plug flow reactor (TSPFR) applied to complex reactions—Oxidative dehydrogenation of propane as an example, 219
- Thermal cracking
  - Reaction pathways and product yields in mild thermal cracking of vacuum residues: A multi-lump kinetic model, 239
- Three-phase fluidized bed
- Regime transition in a gas-liquid-solid fluidized bed, 35
- TiO<sub>2</sub> photocatalyst
  - Water purification in a fluidized bed photocatalytic reactor using TiO<sub>2</sub>coated ceramic particles, 155
- Titania
  - Experimental investigation and particle dynamic simulation for synthesizing titania nanoparticles using diffusion flame, 203
- Topochemical reaction kinetics
  - Cycling effects on the methane regeneration kinetics of CuO/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> sorbent, 227
- Transition
  - Regime transition in a gas-liquid-solid fluidized bed, 35
- TS-1/diatomite
  - Deactivation and regeneration of TS-1/diatomite catalyst for hydroxylation of phenol in fixed-bed reactor, 187
- Unobservable uncertainty estimation
  - State estimation for nonlinear systems under model unobservable uncertainties: application to continuous reactor, 139

Upward and downward spray

- Laser-based flow measurement in performance assessment of FCC atomizer, 109
- Varicol®
  - Optimal design and operation of SMB bioreactor for sucrose inversion, 19
- Visbreaking
  - Reaction pathways and product yields in mild thermal cracking of vacuum residues: A multi-lump kinetic model, 239
- Visualization
  - Studies on hydrodynamics of an internal-loop airlift reactor in gas entrainment regime by particle image analyzer, 69

## Volatility distribution

Low-temperature catalytic hydrothermal treatment of wood biomass: analysis of liquid products, 127

## Wastewater treatment

Degradation of linuron in aqueous solution by the photo-Fenton reaction, 269

# Water purification

Water purification in a fluidized bed photocatalytic reactor using TiO<sub>2</sub>coated ceramic particles, 155

# Wet oxidation

Kinetic modeling of the promoted and unpromoted wet oxidation of debarking evaporation concentrates, 101

# Zero gap solid polymer electrolyte reactor

Paired electrolysis in a solid polymer electrolyte reactor— Simultaneously reduction of nitrate and oxidation of ammonia, 257