contents

PERSPECTIVE

Toward Transformational Carbon Capture Systems
David C. Miller, John T. Litynski, Lynn A. Brickett, Bryan D. Morreale
Published online October 28, 2015

Quantitative Assessment of Fine-Grid Kinetic-Theory-Based Predictions of Mean-Slip in Unbounded Fluidization 11

William D. Fullmer, Christine M. Hrenya Published online October 5, 2015

AICHE LETTER: PROCESS SYSTEMS ENGINEERING

Stereo Imaging of Crystal Growth Cai Y. Ma, Jing J. Liu, Xue Z. Wang

Published online October 7, 2015

PARTICLE TECHNOLOGY AND FILLIDIZATION

Experimental Investigation of Solid Particles Flow in a Conical Spouted

Bed Using Radioactive Particle Tracking
Laurent Spreutels, Benoit Haut, Robert Legros, Francois Bertrand,
Jamal Chaouki

Published online September 3, 2015

Use of CuO/MgAl₂O₄ and La_{0.8}Sr_{0.2}FeO₃/\gamma'-Al₂O₃ in Chemical Looping Reforming System for Tar Removal from Gasification Gas Martin Keller, Henrik Leion, Tobias Mattisson Published online September 17, 2015 38

Dispersion of Feed Spray in a New Type of FCC Feed Injection Scheme *Zihan Yan, Yiping Fan, Zhao Wang, Sheng Chen, Chunxi Lu* Published online September 25, 2015

CFD-DEM Modeling of Gas Fluidization of Fine Ellipsoidal Particles 62

Jieqing Gan, Zongyan Zhou, Aibing Yu Published online October 1, 2015

Simultaneous Model Selection and Parameter Estimation for Lithium-lon Batteries: A Sequential MINLP Solution Approach Jia-Ni Shen, Yi-Jun He, Zi-Feng Ma Published online September 21, 2015

A New Dynamic Model of Crude Oil Fouling Deposits and Its Application to the Simulation of Fouling-Cleaning Cycles

Emilio Diaz-Bejarano, Francesco Coletti, Sandro Macchietto Published online September 25, 2015

Sustainability Decision Support Framework for Industrial System 108

Jingzheng Ren, Di Xu, Huan Cao, Shun'an Wei, Lichun Dong, Michael Evan Goodsite

Published online September 25, 2015

Optimal Flowsheet Configuration of a Polymerization Process with

131

Embedded Molecular Weight Distributions Chen Zhang, Zhijiang Shao, Xi Chen, Xueping Gu, Lianfang Feng, Lorenz T. Biegler

Published online September 29, 2015

A Novel Framework for Integrating Data Mining with Control Loop 146

Performance Assessment

Laya Das, Babji Srinivasan, Raghunathan Rengaswamy Published online September 30, 2015

Carbon Capture from Natural Gas Combined Cycle Power Plants: 166

Solvent Performance Comparison at an Industrial Scale Mahdi Sharifzadeh, Nilay Shah

Published online October 26, 2015

REACTION ENGINEERING, KINETICS AND CATALYSIS

Kinetic Study of 1-Butanol Dehydration to
Di-n-butyl Ether over Amberlyst 70
María Ángeles Pérez-Maciá, Roger Bringué, Montserrat Iborra,
Javier Tejero, Fidel Cunill
Published online September 8, 2015

CFD Simulation of a Transpiring-Wall SCWO Reactor: Formation and Optimization of the Water Film 195

Fengming Zhang, Chunyuan Ma Published online September 24, 2015



Cover illustration. The cover shows a collage of images from the CCSI Toolset and the NETL Chemical Looping Reactor with CO₂ molecules in the foreground. Collage was created by Stephen T. Anderson, NETL.

Lumped Reaction Kinetic Models for Pyrolysis of Heavy Oil in the Presence of Supercritical Water 207

Qing-Kun Liu, Dao-Qi Zhu, Xue-Cai Tan, Pei-Qing Yuan, Zhen-Min Cheng, Wei-Kang Yuan, Jing-Yi Yang

Published online October 1, 2015

Long-Term Testing of a High Temperature Polymer Electrolyte 217

Membrane Fuel Cell: The Effect of Reactant Gases F. Javier Pinar, Nadine Pilinski, Peter Wagner

Published online October 1, 2015

SEPARATIONS: MATERIALS, DEVICES AND PROCESSES

Thermodynamics and Separation Process for Quaternary Acrylic Systems

Cuncun Zuo, Yaping Li, Chunshan Li, Shasha Cao, Haoyu Yao, Suojiang Zhang

Published online September 7, 2015

Effect of Dead Volumes on the Performance of an Industrial-Scale

Simulated Moving-Bed Parex Unit for p-Xylene Purification Marta S. P. Silva, Alírio E. Rodrigues, José P. B. Mota

Published online September 15, 2015

Study of the Effect of Porous Particles on Vapor-Liquid Equilibrium Using the Headspace Gas Chromatography Zhong-Li Tang, Qi-Lun Wang, Lin-Ming Peng Published online September 17, 2015

Impact of Polyethylene Glycol as Additive on the Formation and Extraction Behavior of Ionic-Liquid Based Aqueous Two-Phase System 264

Mohammad Vahidnia, Gholamreza Pazuki, Shiva Abdolrahimi

Published online September 24, 2015

THERMODYNAMICS AND MOLECULAR-SCALE PHENOMENA

A New Insight to Validation of Local Composition Models in Binary

Mixtures Using Molecular Dynamic Simulation Ali Haghtalab, Jaber Yousefi Seyf

Published online September 29, 2015

TRANSPORT PHENOMENA AND FLUID MECHANICS

Liquid-Liquid Flow Patterns in Reduced Dimension Based on Energy 287

Minimization Approach Aadithya Kannan, Subhabrata Ray, Gargi Das

Published online September 10, 2015

Interaction Dynamics of a Spherical Particle with a Suspended Liquid 295

Film Subhasish Mitra, Elham Doroodchi, Geoffrey M. Evans, Vishnu Pareek,

Jyeshtharaj B. Joshi
Published online September 21, 2015

Effect of Channel Size on Liquid-Liquid Plug Flow in Small Channels Dimitrios Tsaoulidis, Panagiota Angeli 315

Published online September 22, 2015

Breakup Dynamics for High-Viscosity Droplet Formation in a Flow-325

Focusing Device: Symmetrical and Asymmetrical Ruptures Wei Du, Taotao Fu, Chunying Zhu, Youquang Ma, Huai Z. Li

Published online September 25, 2015

Analysis of Particle Cloud Height Dynamics in a Stirred Tank 338

Matthias Eng, Rasmus Jonsson, Anders Rasmuson Published online October 1, 2015

Instructions for contributors

Inside back cover