

Log In Register  Cart

ACS ACS Publications C&EN CAS



ACS Journals | ACS ChemWorx | ACS Books | ACS Style Guide | C&EN Archives | Subscribe | Help

**I&EC** research  
Industrial & Engineering Chemistry Research

Search text  Anywhere   
 Ind. Eng. Chem. Res.  All Publications/Website

## Table of Contents



Larger Cover

November 28, 2012  
Volume 51, Issue 47  
Pages 15299-15536

### In this issue:

REVIEWS	APPLIED CHEMISTRY	KINETICS, CATALYSIS, AND REACTION ENGINEERING
MATERIALS AND INTERFACES	PROCESS DESIGN AND CONTROL	SEPARATIONS
GENERAL RESEARCH	RESEARCH NOTES	

### ADVERTISEMENT



**SciFinder**  
Sign In 



ACS AuthorChoice indicates the article is freely available through sponsorship by the author or related funding agency. [More about this program.](#)



ACS Editors' Choice indicates the article is freely available based on recommendations from ACS Editors. [More about this program.](#)

### Browse By Issue

Select Decade   
 Select Volume   
 Select Issue

[List of Issues](#)

For Selected: [View Abstracts](#) [Add to ACS ChemWorx](#) [Download Citations](#)    

### REVIEWS

#### Application of Coal Fly Ash in Air Quality Management

M. Ahmaruzzaman and V.K Gupta

pp 15299-15314

Publication Date (Web): November 5, 2012 (Review)

DOI: 10.1021/ie301336m

**ACS** Section: [Fossil Fuels, Derivatives, and Related Products](#)

### Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [2193K]

PDF w/ Links [406K]

Full Text HTML

[Add to ACS ChemWorx](#)



**Access your research from anywhere.**

Add articles to ACS ChemWorx to access your ACS ActiveView PDF annotations from multiple devices.

[ACS ChemWorx English Editing Service](#)  
[ACS ChemWorx Features](#)  
[About ACS ActiveView PDF Tutorials](#)

[Go to ACS ChemWorx](#)

### ADVERTISEMENT

### APPLIED CHEMISTRY

#### Comparative Study on Adsorption of Iodine Vapor by Silica-Supported Cu Nanoparticles and Micronized Copper

Mohammad Outokesh, Arezoo Saket, Seyed Javad Ahmadi, Morteza Hosseinpour, and Ali Reza Khanchi

pp 15315-15323

Publication Date (Web): November 5, 2012 (Article)

DOI: 10.1021/ie301263j

**ACS** Section: [Surface Chemistry and Colloids](#)

### Abstract | Supporting Info

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [1376K]

PDF w/ Links [441K]

Full Text HTML

[Add to ACS ChemWorx](#)



Figure 1 of 7

**Enhancement of Removal Rate of an Organic Pollutant in the Presence of Immobilized TiO<sub>2</sub> Nanoparticles with Inorganic Anions Combination: Optimization Using Taguchi Approach**

Mohammad A. Behnajady, Mahsa Hajiahmadi, and Nasser Modirshahla

pp 15324-15330

Publication Date (Web): November 13, 2012 (Article)

DOI: 10.1021/ie301521z

Section: Waste Treatment and Disposal

Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [602K]

PDF w/ Links [289K]

Full Text HTML

Add to ACS ChemWorx

**Efficient One-Pot Synthesis of 5-(Ethoxymethyl)furfural from Fructose Catalyzed by a Novel Solid Catalyst**

Liu Bing, Zehui Zhang, and Kejian Deng

pp 15331-15336

Publication Date (Web): September 4, 2012 (Article)

DOI: 10.1021/ie3020445

Section: Industrial Organic Chemicals, Leather, Fats, and Waxes

Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [383K]

PDF w/ Links [249K]

Full Text HTML

Add to ACS ChemWorx

KINETICS, CATALYSIS, AND REACTION ENGINEERING

**Modeling Coke Distribution above the Freeboard of a FLUID COKING Reactor**

Christopher B. Solnordal, Kevin J. Reid, Larry P. Hackman, Ray Cocco, and John Findlay

pp 15337-15350

Publication Date (Web): November 6, 2012 (Article)

DOI: 10.1021/ie3010176

Section: Fossil Fuels, Derivatives, and Related Products

Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [2417K]

PDF w/ Links [739K]

Full Text HTML

Add to ACS ChemWorx

**Heterogeneous Catalytic Oxidation of Aqueous Phenol on Red Mud-Supported Cobalt Catalysts**

Syaifullah Muhammad, Edy Saputra, Hongqi Sun, Ha-Ming Ang, Moses O. Tade, and Shaobin Wang

pp 15351-15359

Publication Date (Web): November 12, 2012 (Article)

DOI: 10.1021/ie301639t

Section: Waste Treatment and Disposal

Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [2857K]

PDF w/ Links [521K]

Full Text HTML

Add to ACS ChemWorx

**Adsorption and Photocatalytic Oxidation of Methanol-Benzene Binary Mixture in an Annular Fluidized Bed Photocatalytic Reactor**

Geng Qijin, Wang Qingming, and Zhang Bin

pp 15360-15373

Publication Date (Web): October 23, 2012 (Article)

DOI: 10.1021/ie302207p

Section: Industrial Organic Chemicals, Leather, Fats, and Waxes

Abstract

ACS ActiveView PDF

*Hi-Res Print, Annotate, Reference QuickView*

PDF [4320K]

PDF w/ Links [799K]

Full Text HTML

Add to ACS ChemWorx

MATERIALS AND INTERFACES

**Low Molecular Weight Organogels and Their Application in the Synthesis of CdS Nanoparticles**

Pradipta Kumar, Mahesh M. Kadam, and Vilas G. Gaikar

pp 15374-15385

Publication Date (Web): November 5, 2012 (Article)

DOI: 10.1021/ie300947x

Section: Surface Chemistry and Colloids

Abstract | Supporting Info

ACS ActiveView PDF






*Hi-Res Print, Annotate, Reference QuickView*








PDF [2629K]


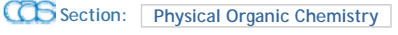
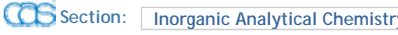
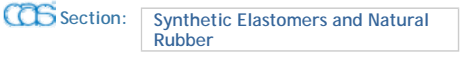
PDF w/ Links [643K]

Full Text HTML

C&EN WEBINARS  
presents...

<input type="checkbox"/>		<a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/>	<b>Preparation of High Pore Volume Pseudoboehmite Doped with Transition Metal Ions through Direct Precipitation Method</b> Fan Yang, Qiang Wang, Jinglong Yan, Jian Fang, Jihua Zhao, and Weiguo Shen pp 15386-15392 Publication Date (Web): November 12, 2012 (Article) DOI: 10.1021/ie3017626 	<a href="#">Abstract   Supporting Info</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [2168K]</a> <a href="#">PDF w/ Links [520K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
PROCESS DESIGN AND CONTROL		
<input type="checkbox"/>	<b>A Plant-Wide Dynamic Model of a Continuous Pharmaceutical Process</b> Brahim Benyahia, Richard Lakerveld, and Paul I. Barton pp 15393-15412 Publication Date (Web): October 31, 2012 (Article) DOI: 10.1021/ie3006319	<a href="#">Abstract   Supporting Info</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [3523K]</a> <a href="#">PDF w/ Links [1108K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/>	<b>Improving Energy Efficiency and Cost-Effectiveness of Batch Distillation for Separating Wide Boiling Constituents. 1. Vapor Recompression Column</b> Md. Malik Nawaz Khan, G. Uday Bhaskar Babu, and Amiya K. Jana pp 15413-15422 Publication Date (Web): November 5, 2012 (Article) DOI: 10.1021/ie300907b 	<a href="#">Abstract</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [451K]</a> <a href="#">PDF w/ Links [353K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/>	<b>Two-Stage Start-Up to Achieve the Stable via-Nitrite Pathway in a Demonstration SBR for Anaerobic Codigestate Treatment</b> Nicola Frison, Silvia Lampis, David Bolzonella, Paolo Pavan, and Francesco Fatone pp 15423-15430 Publication Date (Web): November 1, 2012 (Article) DOI: 10.1021/ie3009742 	<a href="#">Abstract</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [3075K]</a> <a href="#">PDF w/ Links [383K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/>	<b>Process Configurations and Simulations for a Novel Single-Column Cryogenic Air Separation Process</b> Hua Zhou, Yunan Cai, Yao Xiao, Zeinab A. Mkhalel, Biao You, Jia Shi, Jun Li, and Bing H. Chen pp 15431-15439 Publication Date (Web): November 7, 2012 (Article) DOI: 10.1021/ie3022225 	<a href="#">Abstract</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [402K]</a> <a href="#">PDF w/ Links [262K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/>	<b>Numerical Simulation of the Flue Gas and Process Side of Coking Furnaces</b> Junwei Yang, Ningning Tai, Lanjuan Wang, Jiazhi Xiao, and Chaohe Yang pp 15440-15447 Publication Date (Web): November 6, 2012 (Article) DOI: 10.1021/ie302248m 	<a href="#">Abstract   Supporting Info</a>  <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i>  <a href="#">PDF [1557K]</a> <a href="#">PDF w/ Links [417K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
SEPARATIONS		
		<a href="#">Abstract   Supporting Info</a>

<input type="checkbox"/> <b>Incorporating Pinch Distillation Boundaries into the Conceptual Modeling of Batch Distillations: Ternary Mixtures</b> Karina Andrea Torres and José Espinosa pp 15448-15455 Publication Date (Web): November 1, 2012 (Article) DOI: 10.1021/ie301933z  Section: <a href="#">Unit Operations and Processes</a>	<a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [749K]</a> <a href="#">PDF w/ Links [392K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>A Combined Coagulation/Flocculation and Membrane Filtration Process for the Treatment of Paint Industry Wastewaters</b> Dimitris P. Zagklis, Petros G. Koutsoukos, and Christakis A. Paraskeva pp 15456-15462 Publication Date (Web): November 8, 2012 (Article) DOI: 10.1021/ie302086j  Section: <a href="#">Waste Treatment and Disposal</a>	<a href="#">Abstract</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [1431K]</a> <a href="#">PDF w/ Links [321K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>Surface-Dissociated Nanoparticle Draw Solutions in Forward Osmosis and the Regeneration in an Integrated Electric Field and Nanofiltration System</b> Ming Ming Ling and Tai-Shung Chung pp 15463-15471 Publication Date (Web): November 6, 2012 (Article) DOI: 10.1021/ie302331h  Section: <a href="#">Water</a>	<a href="#">Abstract</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [1966K]</a> <a href="#">PDF w/ Links [656K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
GENERAL RESEARCH	
<input type="checkbox"/> <b>A Model for Direct Estimation of Wetting Phase Relative Permeabilities Using a Multistep Drainage Process</b> Shengdong Wang, Mingzhe Dong, and Jun Yao pp 15472-15483 Publication Date (Web): November 1, 2012 (Article) DOI: 10.1021/ie300638t  Section: <a href="#">Unit Operations and Processes</a>	<a href="#">Abstract</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [1208K]</a> <a href="#">PDF w/ Links [566K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>Fast Compartmental Monte Carlo Simulation of Population Balance Models: Application to Nanoparticle Formation in Nonhomogeneous Conditions</b> Roberto Irizarry pp 15484-15496 Publication Date (Web): October 24, 2012 (Article) DOI: 10.1021/ie3011116  Section: <a href="#">Unit Operations and Processes</a>	<a href="#">Abstract</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [1290K]</a> <a href="#">PDF w/ Links [541K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>Local Composition for a Binary Mixture of Particles on a Three-Dimensional Ising Lattice</b> Jean-Pierre Simonin and Virginie Marry pp 15497-15502 Publication Date (Web): November 6, 2012 (Article) DOI: 10.1021/ie301656n  Section: <a href="#">General Physical Chemistry</a>	<a href="#">Abstract   Supporting Info</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [336K]</a> <a href="#">PDF w/ Links [277K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>
<b>Efficient Conversion of Cellulose to Glucose, Levulinic Acid, and Other Products in Hot Water Using SO<sub>2</sub> as a Recoverable Catalyst</b> Weina Liu, Yucui Hou, Weize Wu, Zhenyu Liu, Qingya Liu, Shidong Tian, and Kenneth N. Marsh pp 15503-15508 Publication Date (Web): November 12, 2012 (Article) DOI: 10.1021/ie302317t  Section: <a href="#">Cellulose, Lignin, Paper, and Other Wood Products</a>	<a href="#">Abstract   Supporting Info</a> <a href="#">ACS ActiveView PDF</a> <i>Hi-Res Print, Annotate, Reference QuickView</i> <a href="#">PDF [378K]</a> <a href="#">PDF w/ Links [296K]</a> <a href="#">Full Text HTML</a> <a href="#">Add to ACS ChemWorx</a>

<input type="checkbox"/> <b>Polysulfone/Vanillin Microcapsules Production Based on Vapor-Induced Phase Inversion Precipitation</b> Cinta Panisello and Ricard Garcia-Valls pp 15509-15516 Publication Date (Web): November 6, 2012 (Article) DOI: 10.1021/ie302051a 	<a href="#">Abstract</a>  <a href="#">ACS ActiveView PDF</a> <small>Hi-Res Print, Annotate, Reference QuickView</small> <a href="#">PDF [1499K]</a> <a href="#">PDF w/ Links [408K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>Building Blocks for Ionic Liquids: Vapor Pressures and Vaporization Enthalpies of Alkoxy Derivatives of Imidazole and Benzimidazole</b> Inna V. Garist and Sergey P. Verevkin , Artemiy A. Samarov , Jason E. Bara and Michelle S. Hindman , Scott P. O. Danielsen pp 15517-15524 Publication Date (Web): November 8, 2012 (Article) DOI: 10.1021/ie302383t 	<a href="#">Abstract   Supporting Info</a>  <a href="#">ACS ActiveView PDF</a> <small>Hi-Res Print, Annotate, Reference QuickView</small> <a href="#">PDF [578K]</a> <a href="#">PDF w/ Links [298K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
RESEARCH NOTES	
<input type="checkbox"/> <b>Synthesis, Characterization, and Sorption Behavior of a Novel Composite Cation Exchange Adsorbent</b> Mohammad Shahadat, A. H. Shalla, and A. S. Raeissi pp 15525-15529 Publication Date (Web): November 7, 2012 (Research Note) DOI: 10.1021/ie3014555 	<a href="#">Abstract   Supporting Info</a>  <a href="#">ACS ActiveView PDF</a> <small>Hi-Res Print, Annotate, Reference QuickView</small> <a href="#">PDF [1048K]</a> <a href="#">PDF w/ Links [260K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>
<input type="checkbox"/> <b>Styrene-Butadiene-Styrene Triblock Copolymer Latex via Reversible Addition-Fragmentation Chain Transfer Miniemulsion Polymerization</b> Renzhong Wei, Yingwu Luo, Wang Zeng, Feizhou Wang, and Shaohong Xu pp 15530-15535 Publication Date (Web): November 12, 2012 (Research Note) DOI: 10.1021/ie302067n 	<a href="#">Abstract</a>  <a href="#">ACS ActiveView PDF</a> <small>Hi-Res Print, Annotate, Reference QuickView</small> <a href="#">PDF [4664K]</a> <a href="#">PDF w/ Links [290K]</a> <a href="#">Full Text HTML</a>  <a href="#">Add to ACS ChemWorx</a>

For Selected: [View Abstracts](#) [Add to ACS ChemWorx](#) [Download Citations](#)



1155 Sixteenth Street N.W.  
Washington, DC 20036

ICP# 13047075

Copyright © 2014  
American Chemical Society

Products  
Journals A-Z  
Books  
C&EN  
C&EN Archives  
ACS Legacy Archives  
ACS Mobile  
Video

User Resources  
About Us  
ACS Members  
Librarians  
Authors & Reviewers  
Website Demos

Support  
Get Help  
For Advertisers  
Institutional Sales  
  
[Live Chat](#)

## Partners

