

Emerging Technologies in Clean Energy for the Twenty-First Century

**Topical Conference at the 2012 AIChE Spring Meeting and 8th
Global Congress on Process Safety**

**Houston, Texas, USA
1-5 April 2012**

ISBN: 978-1-62276-565-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact AIChE
at the address below.

AIChE
3 Park Avenue
New York, NY 10016-5991

Phone: (203) 702-7660
Fax: (203) 775-5177

www.aiche.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Ethanol Oxidation Model for Pt2/Ru2/Sn.....	1
<i>King-Ki Fung, Daniela S. Mainardi</i>	
CO2 Capture with Modified Lime-Based Pellet Sorbents.....	2
<i>Yinghai Wu, Vasilije Manovic, Ian He, Edward J. Anthony</i>	
Oil Shale Semicokes As Potential Sorbents for Environmental Pollutant Capture	3
<i>Indrek Kulaots, William Trinh</i>	
Aqueous Solubility of Binary and Multicomponent, Tarlike PAH Mixtures	4
<i>James W. Rice, Ross J. Browne, Eric M. Suuberg</i>	
A Modeling Study of the Transient Process of the Fate and Transport for Vapor Intrusion	5
<i>Rui Shen, Eric M. Suuberg</i>	
Anode Characteristics of MDH-Catalyzed Bio-Fuel Cell: A Multi-Scale Modeling Study	6
<i>Purnima Kharidehal, Daniela S. Mainardi</i>	
Study of Gas Diffusion Layers in Direct Methanol Fuel Cells	8
<i>V. K Mathur, Jason Morgan, William Grant</i>	
Performance Evaluation of Electron Beam Lithography Patterned Nafion Membranes for Fuel Cell Applications.....	9
<i>Ayokunle Omosebi, Ronald S. Besser</i>	
Model Formulation and Simulation of a Solid-State Lithium-Based Cell	10
<i>Sarwan S. Sandhu, Joseph P. Fellner</i>	
Study on Particle Sizes for Graphite/Polyphenylene Sulfide Composite Bipolar Plates for Vanadium Redox Flow Battery	17
<i>Xiaofeng Xie, Chun Yang, Jin-Hai Wang, Shubo Wang, Yuming Shang, V. K Mathur</i>	
Advanced Power Generation From Coal Based on An Innovative Design of Solid Oxide Fuel Cell	18
<i>Dhruba Panthi, Bokkyu Choi, Atsushi Tsutsumi</i>	
Modeling and Optimization of a Bioethanol Production Facility	19
<i>Kerron Gabriel, M. M. El-Halwagi</i>	
Biochemical Production of Ethanol and Water-Immiscible Biofuel From Lignocellulosic Biomass: A Comparative Analysis of Environmental and Economic Performance.....	20
<i>Scott M. Paap</i>	
Hydrodeoxygenation of 2-Methoxy-4-Propylphenol in a Microreactor	21
<i>Narendra Joshi, Adeniyi Lawal</i>	
Evaluation of Dual Layer Monolith Catalyst for Auto-Thermal Reforming of Oxygenated Fuels Using Acetic Acid As a Model Compound.....	22
<i>Bi Chen, John T. Adeosun, Bob Farrauto, Adeniyi Lawal</i>	
Comparing the Energy Yield of Different Biodegradable Materials for Biogas Production.....	23
<i>Oluwemi Olasoji Adetule</i>	
An Evaluation of Pyrolysis Oil Properties and Chemistry As Related to Process and Upgrade Conditions with Special Consideration to Pipeline Shipment.....	24
<i>Bruce G. Bunting, Alison C. Boyd</i>	
Author Index	