

Emerging Technologies in Clean Energy 2019

Topical Conference at the 2019 AIChE Spring Meeting
and 15th Global Congress on Process Safety

New Orleans, Louisiana, USA
31 March - 4 April 2019

ISBN: 978-1-5108-8679-7

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© (2019) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2019)

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

AIChE
120 Wall Street, FL 23
New York, NY 10005-4020

Phone: (800) 242-4363
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: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

(65A) DETERMINATION OF EFFECTIVE TRANSPORT PARAMETERS FROM PARTICLE-RESOLVED CFD SIMULATIONS FOR A SIMPLIFIED FIXED-BED REACTOR MODELING	1
<i>Nico Jurtz, Philipp Waldherr, David Lucht, Thomas Eppinger, Matthias Kraume</i>	
(65B) SIMULATION OF STRUCTURAL EFFECTS OF MONOLITH CATALYST ON METHANE DRY REFORMING IN A SOLAR THERMOCHEMICAL REACTOR	2
<i>Han Zhang, Joseph D. Smith</i>	
(65C) MITIGATING MEMBRANE DEGRADATION FOR SAFER AND RELIABLE, DESIGN AND OPERATION OF PROTON EXCHANGE MEMBRANE FUEL CELLS	3
<i>Nilesh Ade, Harendra Nath Mondal, M. Sam Mannan</i>	
(80A) FABRICATION AND CHARACTERISTICS OF NI DOPED TITANIA NANOTUBES BY ELECTROCHEMICAL ANODIZATION	4
<i>Joaquin Tirano, Hugo Ricardo Zea Ramirez, Michael Bredol</i>	
(80B) FERRITE BASED TWO-STEP THERMOCHEMICAL WATER SPLITTING CYCLE: SOLAR REACTOR EFFICIENCY ANALYSIS	5
<i>Rahul Bhosale</i>	
(80C) METAL OXIDE BASED SOLAR DRIVEN TWO-STEP METHANE REFORMING AND WATER SPLITTING CYCLE	6
<i>Rahul Bhosale</i>	
(99A) CONNECTING CHEMICAL PROCESS DESIGN ECONOMICS AND ENTROPY GENERATION	7
<i>John P. O'Connell, William Ahlgren, Friedemann Albrecht, Ralph-Uwe Dietrich, Simon Maier</i>	
(99B) OPTIMIZING CATALYST FREE-BIODIESEL PRODUCTION WITH SUPER-CRITICAL ETHANOL AND CO₂ CO-SOLVENT USING RESPONSE SURFACE METHODOLOGY	8
<i>Aso Hassan, Prashant Nagapurkar, Joseph D. Smith</i>	
(99C) CATALYTIC HYDROTHERMAL LIQUEFACTION OF FOOD WASTE USING INEXPENSIVE CATALYSTS	9
<i>Geoffrey Tompsett, Alex Maag, Alex D. Paulsen, Paul E. Yelvington, Michael T. Timko</i>	
(129A) CARBON-FOOTPRINT ANALYSIS FOR CONVERSION OF CO₂ TO ALKYL CARBONATES	10
<i>C. B. Panchal, Rachel Sturtz, John C. Prindle, Richard Doctor</i>	
(129B) THE DEVELOPMENT OF A PRESSURE SWING ADSORPTION MODEL TO EVALUATE METAL ORGANIC FRAMEWORKS	11
<i>Matthew Pappacena, Justin Mayer, Alex Jimenez</i>	
(129C) SYSTEMATIC SYNTHESIS FRAMEWORK FOR THE DEVELOPMENT OF CO₂ AND H₂ SINKS: A P-GRAPH APPROACH	12
<i>Thokozani Majozi, Jaimee Jugmohan</i>	
(129D) SYNTHESIS OF CERIA BASED REDOX MATERIALS USING CO-PRECIPIATION METHOD FOR SOLAR THERMOCHEMICAL APPLICATION	13
<i>Gorakshnath Takalkar, Rahul Bhosale</i>	
Author Index	