

# **Environmental Aspects, Applications and Implications of Nanomaterials and Nanotechnology 2017**

Topical Conference at the 2017 AIChE Annual Meeting

Minneapolis, Minnesota, USA  
29 October - 3 November 2017

ISBN: 978-1-5108-5780-3

**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© (2017) by AIChE  
All rights reserved.

Printed by Curran Associates, Inc. (2018)

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](http://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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>(302b) Soot Source Identification By Laser Derivitization</b> .....	1
<i>Madhu Singh, Randy Vander Wal</i>	
<b>(302c) Evaluation of Biological Effects Using a Nano-Ceria Based Diesel Fuel Additive with <i>in vitro</i> Air-Liquid Interface Cell Exposure Systems of Different Flow Patterns</b> .....	2
<i>Lynn E. Secondo, Penelope K. Baltzopoulou, Akrivi Asimakopoulou, Daniel Deloglou, Christos Softas, Spyros Petrakis, Leonidas Chasapidis, Eleni Papaioannou, Athanasios G. Konstandopoulos, Nastassja Lewinski</i>	
<b>(302f) Oxidative Stress Induced By Ambient Air PM<sub>2.5</sub>: Which Are the Main Sources?</b> .....	3
<i>Marianthi Kermenidou, Spyros Karakitsios, Dimosthenis Sarigiannis</i>	
<b>(302d) Development of Predictive Tools for Aviation Non-Volatile Particulate Emissions</b> .....	6
<i>Joseph Abrahamson, Vander Wal Randy</i>	
<b>(302e) Molecular Initiating Events Linked to Carbon Nanotube Functionalization for Medical Applications</b> .....	7
<i>Dimosthenis Sarigiannis</i>	
<b>(302g) Effect of Combustion Particle Size on Pathologically Important Responses in Lung Cells</b> .....	10
<i>Kamaljeet Kaur, Raziye Mohammadpour, Isabel Jaramillo, Robert Paine, Christopher Reilly, Hamid Ghandehari, Kerry Kelly</i>	
<b>(302a) Oxidative Stress Induced By Secondary Organic Aerosols (SOA) Generated from Biogenic and Anthropogenic Precursors</b> .....	11
<i>Wing-Yin Tuet, Yunle Chen, Shierly Fok, Julie A. Champion, Nga Lee Ng</i>	
<b>(353a) Quantitative Analysis of the Deposited Nanoparticle Dose on Cell Cultures By Optical Absorption Spectroscopy</b> .....	12
<i>Anastasia Spyrogianni, Inge K. Herrmann, Miriam S. Lucas, Jean-Christophe Leroux, Georgios A. Sotiriou</i>	
<b>(353b) Association Rule Mining for Assessing the Relationships Among Biological Responses of Embryonic Zebrafish</b> .....	13
<i>Muhammad Bilal, Yoram Cohen, Rong Liu</i>	
<b>(353c) Dynamic Nanoparticle Restructuring of Lipid Monolayers: Coating Amphiphilicity Trumps Charge</b> .....	14
<i>Geoffrey D. Bothun, Nasim Ganji, Iftheker Khan</i>	
<b>(353d) Liposomal Embedded Inorganic Nanoparticles and the Effects on Membrane Bending Elasticity and Structure Measured by Neutron Spin Echo</b> .....	15
<i>Saptarshi Chakraborty, Michihiro Nagao, Christopher L. Kitchens</i>	
<b>(353e) Natural Organic Matter and Bacterial Inoculum Concentration Affect Copper Toxicity to <i>Escherichia coli</i></b> .....	16
<i>Alex J. Bertuccio, Joe D. Moore, Robert D. Tilton</i>	
<b>(353f) Interactions of Engineered Sub-Micron Silica Particles with Cell Membrane Models</b> .....	17
<i>Ali Asghari Adib, Alexander L. Kelly, Allan E. David, Amir M. Farnoud</i>	
<b>(478a) Nanocarbon-TiO<sub>2</sub> Composites for Photocatalytic Oxidation of Volatile Organic Compounds</b> .....	18
<i>Brian Everhart, Montgomery Baker-Fales, Eric Banning, Haider Almkhelfe, Huan Wang, Placidus B. Amama</i>	
<b>(478b) Nanobiosensing Chemicals That Target Nuclear Hormone Receptors: A Rapid, Versatile Cell-Free Protein Synthesis Approach</b> .....	19
<i>Bradley C. Bundy, Amin Salehi, Miriam Shakalli Tang, Seung Ook Yang, Mark T. Smith, Jeremy Hunt, David W. Wood</i>	
<b>(478c) Detection of Biocides in Industrial Wastewater Using Pullulan-Encapsulated Microorganisms</b> .....	20
<i>Patrick Morkus, Damien Parrello, Matthew Csordas, James Rose, Kenneth Byungjun Choi, Carlos D. M. Filipe, David R. Latulippe</i>	
<b>(478d) Silica Nanoparticle Surface Characteristics Dictate <i>in vitro</i> Cytotoxic Behavior</b> .....	21
<i>Alexander L. Kelly, Kyle D. Paul, Robert D. Arnold, Allan E. David</i>	
<b>(478e) Development of A Novel Nanocatalysts for Environmental Applications Using Helium Isolation Method</b> .....	22
<i>Alexander Orlov, Michael Lindsay, Qiyuan Wu, Shen Zhao, Jiajie Cen, Claron Ridge, Dong Su, Eric A. Stach</i>	
<b>(478f) Multifunctional Graphene Oxide As Remediation Agent</b> .....	23
<i>James G. Radich, Rohit Kanungo, Sahn Deravi</i>	
<b>(549a) Procyanidin-Assisted Synthesis of Fe-Pd Nanoparticles for Superior Dechlorination of p-Chlorophenol</b> .....	24
<i>Mingyue Liu, Rongxin Su, Wei Qi, Zhimin He</i>	

<b>(549b) Synthesis of Ni/<math>\gamma</math>-Al<sub>2</sub>O<sub>3</sub> Catalysts for Methanation of CO<sub>2</sub> at Low Temperature Under Atmospheric Pressure</b> .....	25
<i>Waqar Ahmad, Reyad Shawabkeh, Shakeel Ahmed</i>	
<b>(549d) Applications of Heterogeneous Fenton Catalysts in Pollutant Degradation, Sensing, and Cancer Treatments</b> .....	26
<i>Shih-Yuan Lu</i>	
<b>(549e) Application of Entrapped Nano Zero Valent Iron into Cellulose Acetate Membranes for Domestic Wastewater Treatment</b> .....	27
<i>Mohamed K. Mostafa, Ahmed S. Mahmoud, Rasha A. SaryEl-deen, Robert W. Peters</i>	
<b>(549f) The Role of Carbon Nanotubes in Photocatalytic Conversion of CO<sub>2</sub>/H<sub>2</sub>O and CO<sub>2</sub>/CH<sub>4</sub> Systems to Syngas</b> .....	35
<i>Karishma Piler, Paul Bernazzani, Tracy J. Benson, Cristian Bahrin</i>	
<b>Author Index</b>	