INTERNATIONAL CONFERENCE ON
CATALYSIS AND
CHEMICAL ENGINEERING
FEBRUARY 22-24, 2017

Venue
The DoubleTree by Hilton Baltimore
BWI Airport
Baltimore, MD, USA
### Keynote Presentations

**Annapolis / Harbor Room**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution</th>
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<tbody>
<tr>
<td>08:25</td>
<td>Kinetics of Photocatalytic, Self-Cleaning Surfaces: Connecting Contaminant Removal to Contact Angle Evolution</td>
<td>David Ollis, North Carolina State University, NC, USA</td>
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<tr>
<td>09:00</td>
<td>Barriers on the Way Back: Energy Issues in the Utilization of CO\textsubscript{2} in the Synthesis of Chemicals and Fuels</td>
<td>Michele Aresta, University of Bath, UK</td>
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<tr>
<td>09:35</td>
<td>Oxo-Metal Catalyzed Deoxygenation of Alcohols and Polyols</td>
<td>Kenneth M Nicholas, University of Oklahoma, OK, USA</td>
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<tr>
<td>10:10</td>
<td>Calcium Phosphates versus Conventional Catalysts: Case Study of Dry Reforming of Methane</td>
<td>Ange Nzihou, Université de Toulouse, France</td>
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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>10:45</td>
<td>Coffee Break</td>
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<tr>
<td>11:00</td>
<td>Technical Session-1 Catalytic Materials</td>
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**Annapolis / Harbor Room**

<table>
<thead>
<tr>
<th>Session</th>
<th>Julia Hsu, University of Texas at Dallas, TX, USA</th>
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<tbody>
<tr>
<td>Chairs</td>
<td>Ge Wang, University of Science and Technology Beijing, China</td>
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<tbody>
<tr>
<td>11:00</td>
<td>Exploring Pd Adsorption, Diffusion, Permeation, and Nucleation on Bilayer SiO\textsubscript{2}/Ru as a Function of Hydroxylation and Precursor Environment: From UHV to Catalyst Preparation</td>
<td>William E Kaden, University of Central Florida, FL, USA</td>
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</tr>
<tr>
<td>11:20</td>
<td>A Mn\textsubscript{2}O\textsubscript{5} Mullite Type Oxides as NO Oxidation Catalyst</td>
<td>Julia Hsu, University of Texas at Dallas, TX, USA</td>
<td></td>
</tr>
<tr>
<td>11:40</td>
<td>Selective Catalytic Oxidation of H\textsubscript{2}S Over Calcium Carbonate-Based Solid Residues as Low Cost and Highly-Performing Catalysts</td>
<td>Doan Pham Minh, Université de Toulouse, France</td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>Nickel Supported Catalyst Prepared from Mixed Oxides as Catalysts for Heterogeneous D-xylose Hydrogenation</td>
<td>Gina Pecchi, University of Concepción, Chile</td>
<td></td>
</tr>
<tr>
<td>12:20</td>
<td>Development of Gold Nanoparticulates Catalyst Deposited on Metal Oxides Synthesized by Hydrothermal Process</td>
<td>Toru Murayama, Tokyo Metropolitan University, Japan</td>
<td></td>
</tr>
<tr>
<td>12:40</td>
<td>Hydrogenation of CO\textsubscript{2} to Fuels (CO and CH\textsubscript{3}OH) on Metal-Oxide Catalysts</td>
<td>Shyam Kattel, Brookhaven National Laboratory, NY, USA</td>
<td></td>
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<tr>
<td>13:00</td>
<td>Development of Smart Ni based Nano-oxyhydrides for Hydrogen Production</td>
<td>Louise Jalowiecki-Duhamel, Lille University of Science and Technology, France</td>
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</tr>
<tr>
<td>13:20</td>
<td>Lunch Break</td>
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Pre Registration Area
14:05-14:25  High Surface Area Microporous Carbons as Photoreactors for the Catalytic Photodegradation of Methylene Blue under UV-Vis Irradiation  
Juan Matos, University of Concepcion, Chile

14:25-14:45  Prickly Structure Rethinks Catalyst Supports  
Ge Wang, University of Science and Technology Beijing, China

14:45-15:05  Valorization of Oxygenated Compounds Present in Biomass-derived Aqueous Fractions into Valuable Products Using Transition Metal Oxides as Catalysts  
Marcelo E Domine, Universidad Politécnica de Valencia, Spain

Bo Yu, Tianjin University, China

15:25-15:45  Ultrastable Plasmonic Photocatalysis Using Polymer-Capped Silver Nanoparticles  
Sammy Verbruggen, University of Antwerp - Sustainable Energy, Air & Water Technology, Belgium

15:45-16:05  Synthesis Characterization and Shaping of Fe Containing Lanthanum Silicate Apatites and their Catalytic Characterisation  
Vassilis Stathopoulos, Technological Educational Institute of Sterea Ellada, Greece

16:05-16:20  Coffee Break  
Main Hallway

16:20-16:40  Comparison Between Recovery of Phase Transfer Catalysts from Waste Water by Adsorption by Zeolite A and Barite  
Noura Elmehbad, Najran University, Saudi Arabia

16:40-17:00  Recent Advances Towards Scaled-up Preparation of Al/Fe-PILC Clay Catalysts: Potential Application in CWPO Oxidation to Improve Drinking Water Quality  
Luis-Alejandro Galeano, Universidad de Nariño, Colombia

17:00-17:20  Valorization of Chloromethanes by Hydrodechlorination with Metallic Catalysts  
Luisa Maria Gomez Sainero, Universidad Autónoma de Madrid, Spain

17:20-17:35  Improving the Catalytic Properties of the (La,Sr)(Cr,M)O$_3$ (M=Mn,Fe) Perovskites by in-situ Nanocatalyst Exsolution for the Fuel Oxidation Layer of Oxygen Transport Membranes  
Despoina Papargyriou, University of St Andrews, UK

17:35-17:50  Highly Efficient, Stable and Controllable Multi-Core, Rattle-Type Ag@Silica Catalyst for the Reduction of 4-Nitrophenol  
Jie Hou, Tianjin University, China

17:50-18:05  Compositional Gradient and Corner Enrichment of Pt in Pt/Pd Bimetallic Nanoparticles  
Lingxuan Peng, Northwestern University, IL, USA

18:05-18:20  Further Surface Analysis of Boron Modified NiMo/Y-Al$_2$O$_3$ Catalysts: Correlation of the Surface Chemical State with their Performance in HDS and HDA Reactions  
Liseth J Duarte Correa, Universidad Industrial de Santander, Colombia

18:30-19:30  Welcome Reception
<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>11:00-11:20</td>
<td><strong>Catalysis by Nanocast Hierarchically Porous Monolithic Materials</strong></td>
<td>Martin G Bakker, The University of Alabama, AL, USA</td>
</tr>
<tr>
<td>11:20-11:40</td>
<td><strong>Organolithium Chemistry Using Flow Microreactors and its Applications to Palladium Catalyzed Crosscoupling</strong></td>
<td>Aiichiro Nagaki, Kyoto University, Japan</td>
</tr>
<tr>
<td>11:40-12:00</td>
<td><strong>Tunable, Privileged P-Chiral Dihydrobenzooxaphosphole-Based Ligands for Application to Asymmetric Catalysis for the Scalable Synthesis of Pharmaceutically Relevant Compounds</strong></td>
<td>Joshua D Sieber, Boehringer Ingelheim Pharmaceuticals, Inc., CT, USA</td>
</tr>
<tr>
<td>12:00-12:20</td>
<td><strong>The Nature of Heterogeneous Palladium Catalyzed Cross-Coupling Reactions on Novel Carbon Support Systems</strong></td>
<td>B Frank Gupton, Virginia Commonwealth University, VA, USA</td>
</tr>
<tr>
<td>12:20-12:40</td>
<td><strong>Electrochemical Mineralization of Synthetic Human Urine and Simultaneous H₂ Generation from an Electrolysis Cell Containing a Ni(II)Cyclam-Modified Nanoparticulate TiO₂, Anode and a Pt Cathode</strong></td>
<td>Juan Manríquez, Centro de Investigación y Desarrollo Tecnológico en Electroquímica, S. C, México</td>
</tr>
<tr>
<td>12:40-13:00</td>
<td><strong>Supported Cobalt-Molybdenum Oxide Catalysts for the Selective Oxidation of Cyclohexane</strong></td>
<td>Akkihebbal K Suresh, Indian Institute of Technology Bombay, India</td>
</tr>
<tr>
<td>13:00-13:20</td>
<td><strong>Intensifying Homogeneous Catalysed Reactions with Fatty Compounds</strong></td>
<td>Andreas J Vorholt, Institute Technische Chemie, Germany</td>
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<tr>
<td>13:20-14:05</td>
<td>Lunch Break</td>
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<tr>
<td>14:05-14:25</td>
<td><strong>Challenge of Environment Friendly Catalyst for High Efficient Synthesis of CO₂ Copolymer</strong></td>
<td>Xianhong Wang, Changchun Institute of Applied Chemistry(CIAC), China</td>
</tr>
<tr>
<td>14:25-14:45</td>
<td><strong>Triflic Acid Functionalized Mesoporous Materials for Conversion of Fructose to Platform Chemicals</strong></td>
<td>Pranjal Kalita, The Energy and Resources Institute, India</td>
</tr>
<tr>
<td>14:45-15:05</td>
<td><strong>Nano-Gold Catalyst for Non-Hg Catalysis Acetylene Hydrochlorination Process in Chinese Coal-Based PVC Industry: Catalysts Design and a Pilot Tube Reactor Evaluation</strong></td>
<td>Guohua Luo, Tsinghua University, China</td>
</tr>
<tr>
<td>15:05-15:25</td>
<td><strong>High-Density Monolayers of Metal Complex for Catalytic Application</strong></td>
<td>Kenji Hara, Tokyo University of Technology, Japan</td>
</tr>
<tr>
<td>15:25-15:45</td>
<td><strong>Asymmetric Hydrogenation of Ketones Directed Towards Chiral Intermediates of Pharmaceutical Interests</strong></td>
<td>Zhaoguo Zhang, Shanghai Jiao Tong University, China</td>
</tr>
<tr>
<td>15:45-16:05</td>
<td><strong>A Pd/CeO₂ “H₂ Pump” for the Direct Amination of Alcohols</strong></td>
<td>Marc Pera-Titus, E2P2L UMI 3464 CNRS/Solvay, China</td>
</tr>
</tbody>
</table>
16:05-16:20  Coffee Break  
Main Hallway

16:20-16:40  Preparation of IrO$_2$-Ta$_2$O$_5$½Ti Electrodes by Immersion, Painting and Electrophoretic Deposition for the Electrochemical Removal of Hydrocarbons from Water  
Erika Bustos, Centro de Investigación y Desarrollo Tecnológico en Electroquímica, S. C, Mexico

16:40-17:00  Green Synthesis of Benzyl Acetate by Gas Phase Acetoxylation Using Pd Based Catalysts  
V Narayana Kalevaru, Leibniz Institute for Catalysis, Germany

17:00-17:20  One-Pot Solvothermal Synthesis of Bimetallic PtMn and Trimetallic PtMnFe Nanocatalysts with Enhanced Activity and Selectivity for Biomass Conversion  
Honghong Shi, University of Kansas, KS, USA

17:20-17:40  Impact of Soot on NH$_3$-SCR, NH$_3$ Oxidation and NH$_3$ TPD Over Cu/SSZ-13 Zeolite  
Lidija V Trandafilovic, Chalmers University of Technology, Sweden

17:40-18:00  Preparation, Characterization and Application of Multiphase Capillary Photo-Reactors  
Reyna Natividad, Centro de Investigación en Química Sustentable UAEM-UNAM, México

18:00-18:15  Transesterification of Propylene Carbonate with Methanol to Dimethyl Carbonate using Supported Alkali Metal Oxides Catalysts  
Ziwei Song, University of Kansas, KS, USA

18:15-18:30  Sulfonic Acid Functionalized Silica Nanoparticles as Catalysts in the Esterification of Free Fatty Acids  
Andreia F Peixoto, Universidade do Porto, Portugal

18:30-19:30  Welcome Reception
Day-2  February 23, 2017  

**Keynote Presentations**

**Annapolis Room**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>08:25-09:00</td>
<td>Biocatalytic Based Mechanisms for Enabling Enzyme-Like Nanocatalysis</td>
<td>Michael J Heller, University of California San Diego, CA, USA</td>
</tr>
<tr>
<td>09:00-09:35</td>
<td>Functional Nanomaterials: Potential and Promise in Catalysis and Gas Sensing</td>
<td>M Ishaque Khan, Illinois Institute of Technology, IL, USA</td>
</tr>
<tr>
<td>09:35-10:10</td>
<td>Catalysis by Design: Well-defined Single-site Heterogeneous Catalysts via Surface Organometallic Chemistry</td>
<td>Jean-Marie Basset, King Abdullah University of Science and Technology, Saudi Arabia</td>
</tr>
<tr>
<td>10:10-10:45</td>
<td>Alloying and Structuring in Nanocatalysts</td>
<td>Chuan-Jian Zhong, State University of New York at Binghamton, NY, USA</td>
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10:45-11:00 Coffee Break  

**Main Hallway**

**Technical Session-3  Catalysis and Energy**

**Annapolis Room**

<table>
<thead>
<tr>
<th>Session</th>
<th>Jimmy C Yu, The Chinese University of Hong Kong, China</th>
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<td>Chuan-Jian Zhong, State University of New York, NY, USA</td>
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<tbody>
<tr>
<td>11:20-11:40</td>
<td>Natural Gas Upgrading Towards Value-Added Chemicals</td>
<td>John Hu, West Virginia University, WV, USA</td>
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<tr>
<td>11:40-12:00</td>
<td>Carbon Aerogel Supported Platinum-Copper Nanoalloys Using Supercritical Deposition as Electrocatalysts for PEM Fuel Cells</td>
<td>Can Erkey, Koç University, Turkey</td>
</tr>
<tr>
<td>12:00-12:20</td>
<td>CO₂ Reduction and Water Oxidation by New Semiconductor Photocatalysts</td>
<td>Kazuhiko Maeda, Tokyo Institute of Technology, Japan</td>
</tr>
<tr>
<td>12:40-13:00</td>
<td>Development of Novel Heterogeneous Catalysts for the Production of Green Diesel</td>
<td>Palligarnai T Vasudevan, University of New Hampshire, NH, USA</td>
</tr>
<tr>
<td>13:00-13:20</td>
<td>Effect of Mesoporous Catalyst-Supports and Metals on Hydrogen Production via Steam Reforming of Alcohols</td>
<td>D Kuila, North Carolina A&amp;T State University, NC, USA</td>
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<tr>
<td>13:20-14:05</td>
<td>Lunch Break</td>
<td>Pre Registration Area</td>
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<tr>
<td>14:05-14:25</td>
<td>Oxidative Desulfurization for Resources With High Sulfur Contents</td>
<td>Hongyun Yang, IntraMicron Inc., AL, USA</td>
</tr>
<tr>
<td>14:25-14:45</td>
<td>Upgrading of Pyrolysis Bio-Oil Using Pd/C and BioPd/C Catalysts</td>
<td>Iain Kings, University of Birmingham, UK</td>
</tr>
</tbody>
</table>
14:45-15:05  Ceria Encapsulated Rh Nanocatalysts for Steam Reforming of Polyalcohol in Microreactors
Vetrivel Shanmugam, Eindhoven University of Technology, The Netherlands

15:05-15:25  Fine-Tuning of Metal-Carbon Catalysts: Learning from Natural Catalysts
Xuezhi Duan, East China University of Science and Technology, China

15:25-15:45  Photocatalytic Conversion of CO\textsubscript{2} by H\textsubscript{2}O as an Electron Donor Using All-Solid State Photocatalysts
Kentaro Teramura, Kyoto University, Japan

15:45-16:05  Ruthenium Bipyridine Complexes for Photocatalytic Reactions
Erika Martin Arrieta, Universidad Nacional Autónoma de México, México

16:05-16:20  Coffee Break
Main Hallway

16:20-16:40  Photo-Catalytic CO\textsubscript{2} Conversion Using Wireless Photo Voltaic Cell
Kibum Kim, Chungbuk National University, South Korea

16:40-17:00  Visible Light Induced Methanol Production from CO\textsubscript{2} with the Hybrid System of Biocatalyst and Photocatalyst
Yutaka Amao, Osaka City University, Japan

17:00-17:20  Fuel-Forming Electrocatalysis on Dynamically Strained Electrodes
Drazenka Svedruzic, National Renewable Energy Laboratory, CO, USA

17:20-17:40  Partial Oxidation of Ethanol Using V/ZrO\textsubscript{2} and V/TiO\textsubscript{2} Catalysts in a Bench Scale Flow Reactor. NIR Analysis Possibilities of Products
R Velvarská, Unipetrol Centre of Research and Education, Czech Republic

17:40-18:00  Some Advances in HDT Catalysts Developed in the Last Two Decades at CICAT-UIS Colombia
Victor Gabriel Baldovino Medrano, Universidad Industrial de Santander, Colombia

18:00-18:15  Regeneration Study of Ni/Hydroxyapatite Reforming Catalyst
Bruna Rego de Vasconcelos, Université de Toulouse, France

18:15-18:30  Colloidal Solution Combustion Synthesis: A Novel Scalable Method to Produce Catalysts with Tailored Porosity
Albert A Voskanyan, The University of Hong Kong, Hong Kong

18:30-19:10  Poster Presentations (See Annexure)
Francis Scott Key Room

Technical Session-4  Nanocatalysis • Reaction Engineering

Session Chairs
Jie Liu, Duke University, NC, USA Yu-Wen Chen, National Central University, Taiwan

11:00-11:20  Product Selectivity in Plasmonic Photocatalysis for Carbon Dioxide Hydrogenation
Jie Liu, Duke University, NC, USA

Yu-Wen Chen, National Central University, Taiwan

11:40-12:00  Exploration of Multiply Twinned AgNi Alloy Nanoparticles as Highly Active Catalyst for Multiple Transformation Reactions
Sasanka Deka, University of Delhi, India
12:00-12:20  Synthesis of Metal-Based Nanomaterials for Catalysis Inspired by Molecular Chemistry Concepts  
Karine Philippot, Université de Toulouse, France

12:20-12:40  Effect of CeZrO₂-Modification pf (Pd-Rh)/Al₂O₃ Catalyst Upon CH₄ Bi-Reforming Performance  
Kiseok Kim, Yeungnam University, South Korea

12:40-13:00  Copper and Palladium Nano-Catalysts in Eco-friendly Media: From the Design to Applications  
Montserrat Gomez, Université de Toulouse, France

13:00-13:15  Plant-Mediated Synthesis of ZnO Supported Ni-Pd Alloy Catalyst for the Selective Hydrogenation of 1, 3-butadiene  
Tareque Odoom-Wubah, Xiamen University, China

13:15-14:05 Lunch Break

14:05-14:25  Integrated Nanomaterials for Heterogeneous Catalysis  
Hua Chun Zeng, National University of Singapore, Singapore

14:25-14:45  Kinetic Evaluation of p-nitrophenol Reduction Using a Green Hydrogen Source in Presence of Ag-Cu Bimetallic Nanocatalysts  
I Sinha, Indian Institute of Technology (BHU), India

Jesty Thomas, Kuriakose Elias College, India

15:05-15:25  Stability of Metal Alloy Nanoparticles Supported Catalysts Under Reaction Conditions  
Daniela Zanchet, University of Campinas, Brazil

15:25-15:45  NMR-based Characterization of Gas Phase Reaction Processes Within Monolithic Catalyst Supports  
Jürgen Ulpts, University of Bremen, Germany

15:45-16:05  Fabrication and Characterization of Nylon-6-MWCNT Nanocomposite as an Electrochemical Sensor for Sodium Ions Concentration Detection in Sweat  
Hanieh Ghadimi, The University of Akron, OH, USA

16:05-16:20 Coffee Break

16:20-16:40  The Development of Ammonia-fuelled Microchannel Reactors for Hydrogen Production  
Steven Chiuta, HySA Infrastructure Centre of Competence, South Africa

16:40-17:00  Measurement and Modeling of the Thermodynamic Properties for New Fluids and Their Mixtures Used in Various Energy Conversion Systems  
Hiroyuki Miyamoto, Toyama Prefectural University, Japan

17:00-17:20  Eu-Doped MnO₃-TiO₂ Catalyst for the NH₃-SCR of NOₓ  
Jian-Wen Shi, Xi’an Jiaotong University, China

17:20-17:40  Revealing the Catalytic Activation Energy of Single Nanocatalysts  
Weilin Xu, Chinese Academy of Sciences, China

17:40-18:00  Thermodynamic Investigation of the Effect of CO₂ on the Stability of (La₀.₈Sr₀.₂)₀.₉₈MnO₁₋δ  
Shadi Darvish, Florida International University, FL, USA
**Technical Session-5  Environmental Catalysis & Electrocatalysis**

**Session**
Shouzhong Zou, American University, DC, USA

**Chairs**
Kyeongjae Cho, University of Texas at Dallas, TX, USA

**8:25-8:45**
Rationally Identifying Active Sites of Graphene Based Catalysts for Oxygen Reduction Reaction  
Kyeongjae Cho, University of Texas at Dallas, TX, USA

**8:45-9:05**
PtNi Nano-crystals as High Performance Catalysts for Oxygen Reduction Reaction  
Shouzhong Zou, American University, DC, USA

**9:05-9:25**
Oxide-Encapsulated Electrocatalysts  
Daniel V Esposito, Columbia University in the City of New York, NY, USA

**9:25-9:45**
Catalytic Oxidation of Trichloroethylene Over TiO$_2$ Supported Ruthenium Catalysts  
Jian Wang, Chinese Academy of Sciences, China

**9:45-10:05**
Cobalt Oxide-Oxidized Graphene Nanocomposites as Bifunctional Electrocatalysts for Oxygen Reduction and Evolution Reactions  
Cristina Freire, University of Porto, Portugal

**10:05-10:25**
Novel POM@graphene Hybrids as Efficient Electrocatalysts for the Hydrogen Evolution Reaction  
Diana M Fernandes, Universidade do Porto, Portugal

**10:25-10:45**
Activation of Persulfate with Magnetic BiFeO$_3$ Nanoparticles for the Degradation of Aniline  
Imtyaz Hussain, Jinan University, China

**10:45-11:00**
Coffee Break  
Main Hallway

**11:00-11:20**
Effect of the Reduction Temperature of Carbon Supported-Metallic Catalysts in the Gas Phase Hydrodechlorination of Chloromethanes  
Alejandra Arevalo Bastante, Universidad Autónoma de Madrid, Spain

**11:20-11:40**
Low Temperature SCR Poisoning by SO$_2$ over MnFe/TiO$_2$ Catalyst  
Hsunling Bai, National Chiao Tung University, Taiwan

**11:40-12:00**
The Effect of Graphene Based Co-catalysts on the Photo-catalytic Abatement of VOCs  
Martina Roso, University of Padova, Italy

**12:00-12:20**
Investigation of Modified Ni-based Electrode Materials for SOFC & SOEC Applications  
Dimitrios K Niakolas, Institute of Chemical Engineering Sciences(FORTH/ICE-HT), Greece

**12:20-12:40**
Plasmonic Photocatalysts with Enhanced Photocatalytic Activity  
Ewa Kowalska, Hokkaido University, Japan
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<td>12:40-13:00</td>
<td>Ammonia Oxidation at Chemically and Electrochemically Nanostructured Pt Nanoparticles</td>
<td>Carlos R Cabrera, University of Puerto Rico, Puerto Rico</td>
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<tr>
<td>13:00-13:45</td>
<td>Lunch Break (Pre Registration Area)</td>
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<tr>
<td>13:45-14:05</td>
<td>Incineration of Toxic Emissions over Novel Pt/Fiberglass Catalyst</td>
<td>Bair Bal'zhinimaev, Boreskov Institute of Catalysis, Russia</td>
</tr>
<tr>
<td>14:05-14:25</td>
<td>Silica Supported Photocatalysts for Removal of Organic Pollutants from Wastewater</td>
<td>Nataša Novak Tušar, National Institute of Chemistry, Slovenia</td>
</tr>
<tr>
<td>14:25-14:45</td>
<td>The Effect of Template's Pore Size for Ethanol Oxidation Activity of 3D-MnO₂</td>
<td>Bingyang Bai, Chinese Research Academy of Environmental Sciences, China</td>
</tr>
<tr>
<td>14:45-15:05</td>
<td>TiO₂ Surface Decoration with Metal Nanoparticles: Visible-Light Photocatalysis to Improve Indoor Air Quality</td>
<td>Marta Stucchi, University of Milano, Italy</td>
</tr>
<tr>
<td>15:05-15:25</td>
<td>Modeling NOx Storage and Reduction for a Diesel Automotive Catalyst Based on Synthetic Gas Bench Experiments</td>
<td>Federico Millo, Politecnico di Torino, Italy</td>
</tr>
<tr>
<td>15:25-15:45</td>
<td>Inhibition of Ferrate(VI) Self-decay on Layered Double Hydroxide for Organic Compound Degradation</td>
<td>Jizhi Zhou, Shanghai University, China</td>
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<tr>
<td>15:45-16:05</td>
<td>Synthesis of High-value-added Catalysts from Heavy Metal Wastes for Effective Removal of Sulfur Hexafluoride</td>
<td>Jia Zhang, Shanghai University, China</td>
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<tr>
<td>16:05-16:20</td>
<td>Coffee Break (Main Hallway)</td>
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<tr>
<td>16:20-16:35</td>
<td>Trimetallic Catalysts Ferrites Niobium-Molybdenum Bulk and Supported on Aerogels Carbon for HDS of Thiophene</td>
<td>Aida Liliana Barbosa Lopez, University of Cartagena, Colombia</td>
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<td>16:35-17:50</td>
<td>Design of Graphene Oxide Loaded Binary Metal Oxides for High Performance of NO Catalytic Reduction</td>
<td>Senyuan Shen, Shanghai University, China</td>
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<td>17:50-18:05</td>
<td>Catalytic Degradation of Natural Organic Matter (NOM) by Advanced Oxidation Technologies</td>
<td>Ana María García, Universidad de Nariño, Colombia</td>
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<td>18:05</td>
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<tr>
<td>Time</td>
<td>Title</td>
<td>Speaker</td>
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<td>8:25-8:45</td>
<td>Plasma-Assisted Catalytic Dry Reforming of Methane: Exploring the Effects of Dielectric Barrier Discharge Plasma on Catalytic Performance</td>
<td>Jason C Hicks</td>
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<td>8:45-9:05</td>
<td>New Supported Oxo-Metal- Catalysts for Glycol Deoxydehydration</td>
<td>Kenneth M Nicholas</td>
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<td>9:05-9:25</td>
<td>Catalysts and Adsorbents by Design Using Nanowire Based Materials</td>
<td>Mahendra Sunkara/Babjide Patrick Ajayi</td>
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<td>Activation of Lipase Using Ionic Liquid Engineering</td>
<td>Toshiyuki Itoh</td>
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<td>9:45-10:05</td>
<td>Kinetics of Hydroformylation of Propylene in Propane-Expanded Liquid with Rh-Based Complexes</td>
<td>Dupeng Liu</td>
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<td>10:05-10:25</td>
<td>Vortex Flow Reactor: Potential Applications in Chemical Engineering</td>
<td>Maria Jose Ibanez Gonzalez</td>
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<td>10:25-10:45</td>
<td>Identification of Active Sites for Methyl Lactate Dehydration on Faujasites</td>
<td>Bingjun Xu</td>
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<td>10:45-11:00</td>
<td>Coffee Break</td>
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<tr>
<td>11:00-11:20</td>
<td>Transient CFD Investigation of Photocatalytic Reactors</td>
<td>Siegfried Denys</td>
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<td>11:20-11:40</td>
<td>Numerical Simulation of the Marangoni Effect in the Microstructure, Microhardness and Corrosion Characteristics of the Al-Fe Alloy Varying the Laser Remelting Treatment Velocity</td>
<td>Moises Meza Pariona</td>
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<td>11:40-12:00</td>
<td>Understanding and Intensifying Cyclopropanation Process in Microtube Reaction Platform: A Case Study</td>
<td>Yangcheng Lu</td>
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<td>12:00-12:20</td>
<td>Enhanced Oxidation Catalysis by a Molybdenum Complex Supported on Biochar</td>
<td>Ana P Carvalho</td>
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<td>12:20-12:40</td>
<td>Does Water Hardness Improve the Adsorption of an Acidic Pharmaceutical onto Activated Carbons?</td>
<td>Ana S Mestre</td>
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<td>12:40-13:00</td>
<td>MoS₂-Based Catalysts Sensitivity for FCC Gasoline Hydrodesulfurization: Feedstocks Composition Influence</td>
<td>Sylvette Brunet</td>
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<td>13:00-13:45</td>
<td>Lunch Break</td>
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<td>13:45-14:05</td>
<td>Monte Carlo Simulations of p-nitrophenol Adsorption in Presence of Water on Silver Nanoparticles</td>
<td>A K Mukherjee</td>
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Flow Pulsation Induced Process Intensification in Liquid-Liquid Milli-Contactors
Gargi Das, Indian Institute of Technology Kharagpur, India

Molecular Organometallic Species on Carbon-Based Materials for Catalytic Applications
Sungjin Park, Inha University, South Korea

Selective Aerobic Oxidation of p-Cresol with Co-Catalysts between Metalloporphyrins and Metal Salts
Haiyan Fu, South-Central University for Nationalities, China

Selective Catalytic Reduction of C=O and C=C Bond in Oleic Acid to Biofuel Without Hydrogen Donor Using Nanoscale Catalyst Synthesized by Atomic Layer Deposition
Jie Fu, Zhejiang University, China

Nano-engineered Joining Employing Surface Modified Graphite Nanomaterials
Iman Harsini, Michigan State University, MI, USA

Removal of Dissolved Oxygen Using a Platinum Impregnated Catalytic Membrane
Ifeyinwa Orakwe, Robert Gordon University, UK

Glycerol Esterification Over Amberlyst-35: An Experimental Design Approach for Kinetic Modeling
Karen Vannessa Caballero, Universidad Industrial de Santander, Colombia

Assessment of the Lower Cretaceous Source Rock Using PetroMod Approach in West Qurna Oilfield- Southern Iraq
Rasha F Faisal, Baghdad University, Iraq

Departures
P-1  Plasma-Catalytic Decomposition of Nitrous Oxide over Ru/Y-Alumina
Young Sun Mok, Pennsylvania State University, PA, USA

P-2  Esterification of Oleic Acid Using Dual-End-Functionalized Sn-Phyllosilicates
Ji-Yeon Park, Korea Institute of Energy Research, South Korea

P-3  Synthesis of Magnetic Ru/Fe$_3$O$_4$@C Nanospheres with Controlled Carbon Layer and its High Selectivity to Prepare Cis-pinane
Yue Liu, Qingdao University of Science and Technology, China

P-4  Preparation of Alkylates Gasoline in Polyether-Based Acidic Ionic Liquids
Fengli Yu, Qingdao University of Science and Technology, China

P-5  Simulation of a Three-Way-Catalyst Using a Transient Multi-Channel Model
Jana Aslanjan, Brandenburg University of Technology, Germany

P-6  Catalysts for the Abatement of Industrial VOCs
Zhu Tingyu, Chinese Academy of Sciences, China

P-7  Controlled Synthesis and In-Situ Spectroscopic Study of Highly Efficient Pt-Based Bimetallic and Trimetallic Nanocatalysts
Hua Zhang, Xiamen University, China

P-8  NH$_3$ – SCR of NO on Vanadium Oxides at Low Temperature
Makoto Mino, Tokyo Metropolitan University, Japan

P-9  Some Advances in Photodisinfection Catalysts Developed in the Last Decade at CICAT-UIS Colombia
Luz M Ballesteros, Universidad Industrial de Santander, Colombia

P-10 Visible-Light-Driven Photocatalytic CO$_2$ Reduction Using an Organic Semiconductor and Ru(II) Binuclear Complex Hybrid Photocatalysts
Ryo Kuriki, Tokyo Institute of Technology, Japan

P-11 Preparation and Characterization of Graphene Oxide-TiO$_2$-Ag$_2$CO$_3$ based Catalysts for VOCs Photo-oxidation
Michele Modesti, University of Padova, Italy

P-12 Evaluation Performance of α-alumina Nano-Porous Ceramic Composite for Esterification Applications in Petroleum Refinery
Edidiong Okon, The Robert Gordon University, Aberdeen, UK

P-13 Few Carbon Layer Encapsulated PtNi Alloys as High-performance Catalysts for Oxygen Reduction Reaction
Wenyue Li, American University, DC, USA

P-14 Preparation of Al/Fe-PILC Clay Catalyst from Concentrated Precursors: Process Intensification Towards Scaling-up
Luis-Alejandro Galeano, Universidad de Nariño, Colombia

P-15 RSM Optimization of the Catalytic Wet Peroxide Oxidation of Methyl Orange: Correlation with Major Intermediates and By-products
Ana Maria Garcia, Universidad de Nariño, Colombia
Ordered Mesoporous Carbons Co-Doped with Nitrogen and Iron as Effective Catalysts for Oxygen Reduction Reaction
Xiaojun Liu, American University, DC, USA

Application of Highly Dispersed Metallic Membrane in the Removal of Dissolved Oxygen in Water
Ifeyinwa Orakwe, The Robert Gordon University, Aberdeen, UK

Photocatalytic Reduction of Nitrate Ions in an Aqueous Solution using GO/TiO$_2$ Composites
Chungsying Lu, National Chung Hsing University, Taiwan

Changes in the Density of States and Energy Band Gap of C-doped TiO$_2$ and Correlations with the Photocatalytic Activity of TiO$_2$-Based Materials
Juan Matos, University of Concepcion, Chile

Pyrolytic Sugar Production from Sugarcane Bagasse for Biofuels Production
Victor Haber Perez, State University of Northern of Rio de Janeiro, Brazil

Copper Catalyst Modified with Boron and Lithium for Glycerol Hydrogenolysis
Camilo A Coronado-Delgado, Universidad Industrial de Santander, Colombia

Theoretical Study of NiMoS and FeMoS Bimetallic Systems Supported on Graphene as Catalysts for Hydrodesulfurization
Aida Liliana Barbosa Lopez, University of Cartagena, Colombia
The scale-up of over 99% of catalytic reactions is limited by heat and mass transport resistances that occur at the micron scale (Figure 1). IntraMicron’s microfibrous entrapped catalyst (MFEC) technology improves catalyst performance and facilitates scale-up by simultaneously minimizing heat and mass transport resistances in the catalyst bed. MFECs achieve these performance enhancements by entrapping small catalyst particles (typically 40 – 300 microns) in an open network of sinter-welded micron diameter metal fibers.

**Figure 1.** Comparison of the effectiveness factor (observed reaction rate / intrinsic reaction rate) of MFECs (red) and packed bed (yellow) catalysts for several exothermic catalytic processes.

MFECs provide a demonstrated 10- to 50-fold improvement in the effective radial conductivity through the bed and a 3 – 10 fold improvement in the heat transfer coefficient between the catalyst and inside reactor wall (Figure 2). The performance of a microfibrous entrapped catalyst is analogous to a fixed fluidized bed and provides a uniform velocity profile, no channeling, high thermal conductivity, efficient wall contacting, fast heat transfer, near isothermal temperature profiles, and improved heterogeneous contacting. These performance enhancements have significant benefits for processes including reduced CAPEX and OPEX, minimized impact of process upsets, lower catalyst loading, enhanced catalyst life, improved selectivity, simplified selectivity control, efficient regeneration, and straightforward scale-up.

**Figure 2.** Cu MFEC provides a 10- to 50-fold improvement in effective radial conductivity (Left) and a 3- to 10-fold improvement in inside the wall heat transfer coefficient (Right).

MFECs alone have an ROI of greater than 500% with a payback time of < 1 year due to enhanced catalyst utilization, enhanced activity maintenance, improved selectivity per pass, and increased robustness to process upsets. Microfibrous entrapped catalysts are produced by robust, high-speed wetlay processes that efficiently scale to any required production level. Furthermore, current microfibrous entrapped catalyst manufacturing technology enables any catalyst to be entrapped in a pre-manufactured microfibrous media using methods which do not alter the chemical structure of the catalyst.

**Figure 3.** Left: Optical micrograph of Cu MFEC for FTS. Middle: SEM micrograph of a sintered fiber junction. Right: Rolls of Microfibrous Media