

# NACS Newsletter

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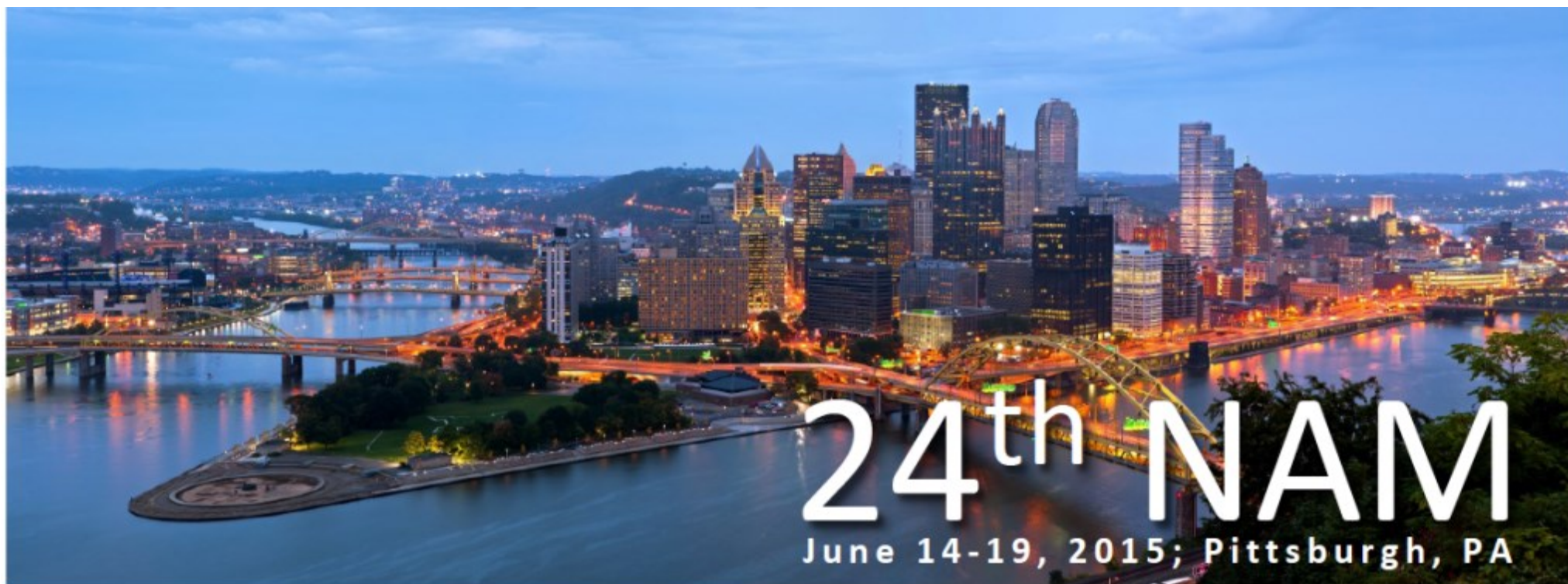
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[24<sup>th</sup> NAM  
June 14-19, 2015  
Pittsburgh, Pennsylvania](#)



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**Directors-at-Large:** Jingguang G. Chen, Columbia University; Robert J. Davis, University of Virginia; Maria Flytzani-Stephanopoulos, Tufts University; Bruce Gates, University of California at Davis; Fabio H. Ribeiro, Purdue University; Stuart L. Soled, ExxonMobil.

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## Dr. Anne Gaffney is named the recipient of the 2015 Eugene J. Houdry Award of the North American Catalysis Society



Dr. Anne Gaffney is the recipient of the 2015 Eugene J. Houdry Award of the North American Catalysis Society. The Eugene J. Houdry Award in Applied Catalysis is sponsored by Clariant. It is administered by The Catalysis Society and awarded biennially in odd-numbered years. This

award recognizes and encourages individual contributions in the field of catalysis with emphasis on the development of new and improved catalysts and processes representing outstanding advances in their useful application. The award consists of a plaque and a prize of \$5,000, which will be presented at the 24<sup>th</sup> North American Meeting of the Catalysis Society to be held in Pittsburgh, Pennsylvania on June 14-19, 2015. The Award Plenary lecture will also be presented during this meeting.

Anne Gaffney is being recognized for outstanding achievements in catalysis as described below: (1) Development of improved rhodium based hydroformylation catalyst for butanediol (BDO) synthesis from propylene oxide; (2) Development of modified zeolite catalyst for Superflex process for conversion of inexpensive HC feeds such as naphtha to valuable light olefins which has been commercialized in 2007; (3) Development of AlkyClean™ process and a new zeolite-based bimetallic catalyst for the alkylation of C3-C5 olefins with isobutane, which has been commercialized in 2013. Her other noteworthy achievements include development of new catalysts based on promoted lanthanide oxides for methane conversion to ethylene by oxidative coupling; invention of a new direct propylene oxide (PO) catalyst for the selective oxidation of propylene with molecular oxygen; development of new catalytic systems for the partial oxidation of methane to syngas at the millisecond contact time; invention of new mixed metal oxide catalysts for the selective oxidation of propane to acrylic acid and

the oxidative dehydrogenation of alkanes to olefins.

She received a Ph.D. in physical organic chemistry from University of Delaware in 1981, and a B.A. in chemistry and mathematics from Mount Holyoke College in 1976. Having worked at ARCO, DuPont, Rohm and Haas, and Lummus in various R&D and leadership roles, she has been a most prolific inventor and an author with 233 patent/patent applications and 94 publications (plus 2 book chapters and 2 books edited) as well as 96 presentations or seminars. She has received many awards such as the ACS Award in Industrial Chemistry in 2013, ACS Fellow in 2010, the Tribute to Women in Industry Award in 2007, and the Catalysis Club of Philadelphia Award in 1999.

## Christophe COPÉRET is the recipient of the 2015 Paul H. Emmett Award in Fundamental Catalysis



**W**e are pleased to announce that Professor Christophe COPÉRET of the Department of Chemistry and Applied Biosciences ETH Zürich is the recipient of the 2015 Paul H. Emmett Award in Fundamental Catalysis, sponsored by the Grace Catalyst Technologies operating segment of W.R. Grace & Co. and administered by The North American Catalysis Society. The Award consists of a plaque and an honorarium of \$5,000. The plaque will be presented during the closing banquet ceremonies at the 24th NAM meeting in Pittsburgh. Professor COPÉRET will also present a plenary lecture during the conference.

The Paul H. Emmett Award in Fundamental Catalysis is given in recognition of substantial individual contributions in the field of catalysis with emphasis on discovery and understanding of catalytic phenomena, proposal of catalytic reaction mechanisms and

identification of and description of catalytic sites and species.

The award recognizes the contributions of Professor Christophe COPÉRET to the preparation of well-defined heterogeneous catalysts through a molecular approach based on the controlled functionalization of surfaces and the atomic description of the surface species and active sites, in particular via solid-state NMR spectroscopy. This approach has allowed a detailed understanding of the structure of active sites and of the reaction mechanism of catalytic processes, such as olefin metathesis and polymerization, thereby providing access to structure–activity relationships and to rational catalyst design.

Enrique Iglesia  
President, North American Catalysis Society

Bruce R. Cook  
Vice President, North American Catalysis Society

## 24<sup>th</sup> NAM



**T**he 24<sup>th</sup> North American Meeting (NAM) of the Catalysis Society will be held on June 14-19, 2015 at the David L. Lawrence Convention Center in Pittsburgh, Pennsylvania. This biennial meeting is widely recognized as the premier topical conference for matters related to heterogeneous catalysis, while also including broad coverage of homogeneous catalysis, electro-catalysis and photo-catalysis.

The 24<sup>th</sup> NAM will include plenary lectures by Hajo Freund (Fritz-Haber-Institute, Berlin), Christophe Coperet (ETH Zürich), and Anne Gaffney (Invista), 21 keynote lectures by leaders in their fields of catalysis, 465 oral presentations, and more than 600 poster presentations.

Named America's "Most Livable City" for many years, Pittsburgh is a global model for economic and environmental transformation with a diversified economy. It is a leader in higher education with several world-class universities and over 100,000 students in the greater Pittsburgh area. The city is strategically located within about one hour flight of half of the U.S. and Canadian population.

For more information, and to plan your conference visit, please visit [www.NAM24.org](http://www.NAM24.org).



## **Hajo Freund of the Fritz Haber Institute has been selected as the recipient of the 2015 Michel Boudart Award for the Advancement of Catalysis**



**W**e are pleased to announce that Professor Hans Joachim Freund of the Fritz Haber Institute is the recipient of the 2015 Michel Boudart Award for the Advancement of Catalysis, sponsored by the Haldor Topsøe Company and administered jointly by the North American

Catalysis Society and the European Federation of Catalysis Societies. The Award will be presented at the 24th North American Meeting of the Catalysis Society (Pittsburgh, June 2015) and at Europacat XII (Kazan, Russia, August 2015).

This Award recognizes and encourages individual contributions to the elucidation of the mechanism and active sites involved in catalytic phenomena and to the development of new methods or concepts that

advance the understanding and the practice of heterogeneous catalysis. It is meant to recognize individuals who bring together the rigor and the international impact that exemplified the accomplishments and the career of Professor Michel Boudart.

Professor Hajo Freund is being specifically recognized for his groundbreaking experimental advances in understanding elementary steps of reactions on catalytic surfaces and for his studies bridging relevant catalysis and surface reactions at single crystal surfaces through the use of novel model catalysts with well-controlled structural features. His research group has synthesized a broad range of relevant

materials, such as oxides of Al, Si, Ce, Ca, and V, useful as active materials or supports, with geometric and electronic structures, including surface defects, probed at the atomic level using tunneling and atomic force microscopy techniques. His work has established the state-of-the-art in new techniques and instrumentation and in the use of relevant model systems to establish mechanistic pathways and structural and electronic requirements in heterogeneous catalysis. One example involves the first implementation of electron spin resonance to single crystals, which has enabled the monitoring of the formation and reactions of radical species derived from adsorbates and metal nanoparticles on

well-defined surfaces. His studies of supported metal nanoparticles (Pd, Au) have led to unprecedented insights into how supports influence the geometric and electronic properties and how dopants influence the binding properties of such nanoparticles, even when dopants reside below support surfaces, through dopant-induced polarons that strongly influence oxygen activation. Recently, his group successfully prepared hexagonal SiO<sub>2</sub> double layers, which allowed the first direct observation of the atomic structure of amorphous silica using tunneling and atomic force microscopy and the synthesis of a two-dimensional zeolite with bridging hydroxyl structures, such as those

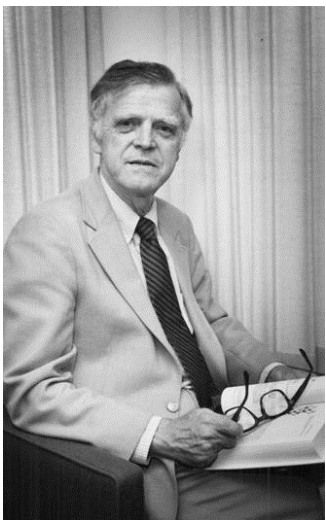
present in chabazite frameworks.

Enrique Iglesia  
President, North American Catalysis Society

Johannes Lercher  
President, European Federation of Catalysis Societies

## The Robert Burwell Lecture-ship in Catalysis

*Deadline for nominations is 1 April 2015*



**T**he Robert Burwell Lectureship in Catalysis is sponsored by Johnson Matthey and administered by The North American Catalysis Society is to be awarded biennially in odd-numbered years. The award consists of a plaque and an honorarium of \$5,000. An additional \$4,500 is available to cov-

er travelling expenses in North America. The awardee is expected to lecture at many of the local catalysis clubs.

The award is given in recognition of substantial contributions to one or more areas in the field of catalysis with emphasis on discovery and understanding of catalytic phenomena, catalytic reaction mechanisms and identification and description of catalytic sites and species. The Awardee will be selected on the basis of his/her contributions to the catalytic liter-

ature and the current timeliness of these research contributions. The recipient may be invited to (1) visit and lecture to each of the affiliated Clubs/Societies with which mutually satisfactory arrangements can be made and (2) prepare a review paper(s) for publication covering these lectures. Publication will be in an appropriate periodical.

Selection of the Award winner will be made by a committee of renowned scientists and engineers appointed by the President of The North American Catalysis Society. Selection shall be made without regard for age, sex, nationality or affiliation. Posthumous awards will be made only when knowledge of the awardee's death is received after announcement of the Award Committee's decision. Nomination packages should indicate the nominee's qualifications, accomplishments with CV, a nominating letter, no more than two seconding letters and a biography of the nominee. A critical evaluation of the significance of candidate's qualifications should be made as well as a statement of the particular contribution(s) on which the nomination is

based. Nomination packages for the Award must be received by **1 April 2015** in one complete package. The letters of recommendation or support documents should be specific to the year and to the name of the award.

All nomination packages (one ELECTRONIC COPY) for the Burwell Award should be sent to Enrique Iglesia, President, North American Catalysis Society at [iglesia@berkeley.edu](mailto:iglesia@berkeley.edu). Receipt of any nomination, will be confirmed by an email message sent to any nominator.

### Previous Burwell Award Winners

1983 Robert L. Burwell  
1985 Wolfgang M. H. Sachtler  
1987 John B. Peri  
1989 Jack H. Lunsford  
1991 Kamil Klier  
1993 Werner O. Haag  
1995 Gary Haller  
1997 Wayne Goodman  
1999 Harold Kung  
2001 Tobin Marks  
2003 Alexis T. Bell  
2005 Enrique Iglesia  
2007 James Dumesic  
2009 Bruce Gates  
2011 Johannes A. Lercher  
2013 Charles Campbell

## Canadian Catalysis Club

### Symposium

The 24<sup>th</sup> Biennial Canadian Catalysis Symposium, 21<sup>st</sup> Century Catalysis Science and Applications will be held from May 8-11, 2016 at the Ottawa Convention Centre in Ontario, Canada. Plenary and invited speakers will discuss their work on nanostructured catalysts, in situ characterization techniques and computational approaches, novel tandem processes, and single-molecule catalysis. Applications will include renewable energy and selective conversion of renewable feedstocks to fuels and chemicals.

Please see details on our website (<http://www.catalysisdivision.ca>) as they become available.

## Catalysis Club of Chicago

### 26<sup>th</sup> NAM Chicago

Paul Barger (UOP) and Justin Notestein (Northwestern University) have been selected as co-chairs for the 26th meeting of the North American Catalysis Society. They are currently looking at sites and dates for the meeting in late spring/early summer of 2019 in Chicago.

### Catalysis Club of Chicago Annual Spring Symposium – Thursday, May 14

The Catalysis Club of Chicago will hold its Annual Spring Symposium at the BP Research Center (150 West Warrenville Road, Naperville, IL 60563) on May 14, 2015. This annual, regional meeting usually has over 100 attendees and provides a forum where catalysis in its various forms — heterogeneous to homogeneous, computational to experimental, surface science to materials synthesis, applied to fundamental, aca-

demic to industrial — can be discussed. Strong focuses within the section are hydrocarbon transformations, zeolites, reaction mechanism studies, metal catalyzed reactions, materials chemistry approaches to catalysts and anything of interest for energy research. We will have an excellent lineup of speakers including the Pines Award address, a keynote and 2 invited lectures as well as over 50 poster presentations. The Keynote speaker will be Professor Matthew Neurock, University of Minnesota.

Additionally, exhibition tables are also available. If you or your company would have catalysis-related exhibits to display that would be of interest to the membership, please contact Neil Schweitzer at [neil.schweitzer@northwestern.edu](mailto:neil.schweitzer@northwestern.edu) for more information. For any further information, please contact Paul Dietrich ([Paul.Dietrich@bp.com](mailto:Paul.Dietrich@bp.com)) or Neil Schweitzer ([neil.schweitzer@northwestern.edu](mailto:neil.schweitzer@northwestern.edu)).

Please see <http://www.catalysisclubchicago.org> for upcoming announcements about the symposium.

## Organic Reactions Catalysis Society

The 26th Organic Reactions Catalysis Society conference will be held March 27-31, 2016 at the Hyatt Regency Miami in Miami, Florida. Please see <http://www.orcs.org/> for upcoming announcements about the conference.

## Catalysis Club of Philadelphia

### Spring Symposium

The 2015 Spring Symposium of the Catalysis Club of Philadelphia will be held on May 7th 2015 at Double Tree Hotel, 4727 Concord Pike, Wilmington DE. Information about the list of speakers, titles and abstracts of presentations and registration can be found at the Catalysis Club of Philadelphia website <http://catalysisclubphilly.org/symposium/>.

### Call for Nominations of the 2015 Catalysis Club of Philadelphia Award

Each year the Catalysis Club of Philadelphia recognizes an outstanding member of the catalysis community, who has made significant contributions to the advancement of Catalysis. Such advancement can be scientific, technological, or in organization leadership. The Award consists of a plaque and a \$1,000 cash prize.

We appreciate your help in submitting nominations. The entire nomination package, including a resume and recommendation letters, should not be more than 10 pages and should include a ½ page tentative award announcement. The deadline for the receipt of nominations is Tuesday, March 31<sup>st</sup>, 2015. Prior nomination packages sent in 2013 or later will automatically be considered for the 2015 Award.

Nomination letters along with supporting materials should be emailed to [carl.a.menning@dupont.com](mailto:carl.a.menning@dupont.com).

Carl Menning  
DuPont  
Experimental Station, 328/306B  
200 Powder Mill Rd.  
Wilmington, DE 19803

## Southwest Catalysis Society

### Symposium

Dear SWCS Members,

Please mark your calendars for Friday April 24<sup>th</sup> as the date for the 2015 Southwest Catalysis Society Symposium. The event will be held on the University of Houston campus. Details of the venue along with driving/parking instructions will be sent closer to the date. We will once again include a poster session to feature the work of graduate students and postdocs. As has been the tradition in previous years, we will be giving poster awards. We strongly encourage students to attend the symposium.

A full program of the event will be sent closer to the date. This year's symposium promises to be another successful event that will feature six distinguished speakers from industry and academia. The speakers include:  
Dr. Thomas Degnan: formerly with ExxonMobil (recipient of the 2012 F.G.

Ciapetta Lectureship in Catalysis from the NACS)

Prof. Jingguang Chen: Columbia University, Department of Chemical Engineering (recipient of the 2015 ACS George A. Olah award)

Dr. Heiko Weiner: Celanese Corporation

Prof. Suljo Linic: University of Michigan, Department of Chemical Engineering (recipient of the 2014 ACS Catalysis Lectureship)

Prof. Mark Bussell: Western Washington University, Department of Chemistry

Prof. Ye Xu: Louisiana State University, Department of Chemical Engineering.

If you have any questions about the symposium, please email Dan Shantz ([dshantz@tulane.edu](mailto:dshantz@tulane.edu)), Jeff Rimer (Jeff Rimer, [jrimer@uh.edu](mailto:jrimer@uh.edu)), or any of the other SWCS officers.

We hope to see you in Houston on April 24<sup>th</sup>.

### Symposium Abstracts

Our SWCS Symposium at the University of Houston is scheduled for April 24th, 2015 and we are now accepting poster

abstracts. Interested graduate students or postdocs should submit their ca. 200 word abstract before April 15th, 2015 to Lars Grabow (grabow@uh.edu). Please use the attached template to prepare your abstract.

Poster boards and easels (36" by 48", landscape orientation) will be provided. As in past years, we will have "Best Poster" awards.

*We are looking forward to seeing you in Houston on April 24th!*

## Award Nominations

We are now accepting nominations for the *2015 Southwest Catalysis Society Award for Excellence in Applied Catalysis*. This award will be presented at the April 24, 2015 Symposium at the University of Houston. To nominate someone, please submit the resume/CV of the person being nominated along with a nomination letter to Dan Shantz (dshantz@tulane.edu). The nominations should be received no later than Friday February 27.

Thank you for your suggestions, and we hope to see you in Houston on April 24<sup>th</sup> for the symposium!

## Tri-State Catalysis Society

### Symposium

The Tri-State Catalysis Society's annual Symposium was held on September 15, 2014 in Louisville, KY and the meeting agenda is shown beside.

Student Presentations were invited at the TSCS-2014 Symposium and a complete list of all presentations and student presenters and universities is listed below:

- **Cummins, Dustin** "Enhanced catalytic activity in MoS<sub>2</sub> Nanowires for H<sub>2</sub> production using intercalation electro doping (UofL)
- **Fuller, Anshuman** "Electrocatalytically-assisted oxidative dehydrogenation of lower alkanes to olefins (OSU)
- **Haase, Mark R.** "The effect of porous alumina support on the growth of CNT on electron beam deposited catalyst "(UC)
- **Kumar, Davinder** "Nitrile Hydratase Insights from bio-inspired Ru(II) catalytic hydration catalysts" (UofL)

### Tri State Catalysis Society Agenda 2014 Symposium

*Keynote Lecture I: Prof. Dr. Joachim Sauer, Humboldt University in Berlin*  
Atomistic Understanding of Catalytic C-H Bond Activation – Oxidative Coupling of Methane

*Keynote Lecture II: Prof. Dr. John Regalbuto, University of South Carolina*  
A Rational Preparation of Single and Bi-metal Supported Catalysts

*Keynote Lecture III: Prof. Dr. Arno de Klerk, Canadian Center for Clean Coal/Carbon and Mineral Processing Technologies, University of Alberta*  
Catalysis of Syncrude: An Anthology of Surprises

*CIAPETTA Lecture: Dr. Paul T. Barger, UOP LLC, a Honeywell Company*  
UOP Advanced MTO Technology - A New Route for the Production of Light Olefins

*Lunch Lecture: Prof. Dr. Burtron H. Davis, Center for Applied Energy Research, University of Kentucky* "CATALYSIS THROUGH THE AGES – seen through the lens of Burt Davis"

*Invited Lecture: Dr. Vladimir Fridman, CLARIANT*  
Heat-Generating Material for On-Purpose Olefin Production

*Invited Lecture: Prof. Dr. Aravind Asthagiri, The Ohio State University*  
CO<sub>2</sub> Electro-reduction on Cu Surfaces

*Invited Lecture: Prof. Dr. Mahendra Sunkara, Conn Center for Renewable Energy Research, UofL*  
Nanowires for High Performance Catalysts by Design: Ultra-deep Desulfurization and H<sub>2</sub> Evolution

*Invited Lecture: Prof. Dr. Nickholas Brunelli, The Ohio State University*  
Designing Acid-Base Cooperative Interactions

*Invited Lecture: Dr. Josh Spurgeon, Conn Center for Renewable Energy Research, University of Louisville*  
Electrocatalysts for Oxygen Evolution and CO<sub>2</sub> Reduction



- **Loe, Ryan A.** “Catalytic deoxygenation of tristearin to hydrocarbons over supported nickel alloy catalysts (UK)
- **Majumdar, Sreshtha S.** “Washcoat development for NO<sub>x</sub> reduction with methane under lean-burn conditions (OSU)
- **Naumovitz, Jennifer** “Formation of 2-Alkenes as secondary products during Fischer-Tropsch Synthesis (EKU)
- **Peak, Sarah** “Tripodal titanium silsesquioxanes: Selective catalysts for alkene epoxidation” (UK)
- **Shafer, Wilson** “The effects of aromatization of hexane at various pressures using isotopic labeling” (UK)
- **Sohn, Hyuntae** “Catalytic characteristics of nano-ceria under ethanol steam reforming” (OSU)

In other news:

- Dr. Peter Smirniotis (Univ. of Cincinnati) received the Lawrence K. Cecil Award from AIChE for his work on environmental catalysis.

- Dr. Burt Davis (University of Kentucky) received the “Distinguished West Virginian Award” from Governor Tomblin on October 24, 2014 which represents the highest honor that can be bestowed upon a person from West Virginia (Burt’s birth place) for outstanding achievement and meritorious service.
- Dr. Helge Toufar of Clariant was named “Kentucky Colonel” for his outstanding service to the Tri-State Catalysis Society and NAM23 in Louisville, Kentucky by Governor Beshear. The Kentucky Colonel represents the highest title of honor bestowed by the Commonwealth of Kentucky.

Elections were held and the new officers for TSCS are:

- President – Uschi M. Graham (Center for Applied Energy Research, UK);
- President Elect – Gary Jacobs (Center for Applied Energy Research, UK)
- Representative to NACS – Umit S. Ozkan (The Ohio State University)
- Secretary—Wayne Turbeville (Clariant)
- Treasurer — Mahendra Sunkara (Conn Center for Renewable Energy, UofL)

Dr. Paul T. Barger of UOP LLC, a Honeywell Company was the invited Ciapetta Lecture. Dr. Barger’s travel was sponsored by UOP.

## Western States Catalysis Club

### Symposium Report

The Western States Catalysis Club 2014 annual symposium was held on March 21<sup>st</sup> at the University of New Mexico in Albuquerque. Approximately 50 engineers and scientists were in attendance to hear the keynote speaker, Professor Charles T. Campbell, the current Burwell Lecturer. Dr. Campbell gave an excellent address on “Thermodynamics and Kinetics of Elementary Reaction Steps on Late Transition Metal Catalysts, and Using Them to Search for Better Catalysts.” Special thanks to Professor Abhaya Datye for organizing the symposium.

Other speakers represented the University of Colorado, Boulder; Colorado School of Mines; the University of New Mexico; the University of Wyoming; Brigham Young University, and Altamira Instruments. The program is attached to this report to show the breadth of the topics presented.

Five graduate students were recognized with awards for their presentations. Altamira Instruments generously sponsored the awards. Our eminent panel of judges, which included Charlie Campbell, Dan Ginosar, Eric Coker, Jim Miller, and Cory Leclerc, had a difficult assignment because the competition was so keen. It was so close, in fact, that we had a 3-way tie for 3<sup>rd</sup> place, which has never occurred before:

- 1<sup>st</sup> Jonathon Horton, Brigham Young University, “Effects of Preparation Variables on an Alumina-supported Fe/Cu/K Fischer-Tropsch Catalyst”
- 2<sup>nd</sup> Allison M. Robinson, University of Colorado, Boulder, “Surface Chemistry on Molybdenum Modified Pt(111)”
- 3<sup>rd</sup> Cristihan Carrillo, University of New Mexico, “Trapping of Mobile Pt Species by PdO Nanoparticles under Oxidizing Conditions”
- 3<sup>rd</sup> Martin J. Menart, Colorado School of Mines, “Pd Intercalated within the Walls of Mesoporous Silica as an Active and Thermally Stable Catalyst for the Heck Reaction”
- 3<sup>rd</sup> Allen R. Morris, University of Wyoming, “Characterization of Ni@Pt and Co@Pt Overlayer Catalysts Using XAS”

A grant of \$1000 from the NACS paid the registration fees for 20 graduate and undergraduate students who either presented their research or were attending the meeting for the first time.

The primary topic of our business meeting was planning for hosting the 25<sup>th</sup> North American Meeting (NAM), which is scheduled for June 4-9, 2017 in Denver, CO at the Hyatt Regency. In conjunction with these preparations, we agreed to change the name of our club from the Western States Catalysis Club to the **Rocky Mountain Catalysis Society**.

## Club Directory

### CANADIAN CATALYSIS DIVISION

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### CATALYSIS CLUB OF CHICAGO

Website: <http://catalysisclubchicago.org>

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### CATALYSIS CLUB OF PHILADELPHIA

Website: <http://catalysisclubphilly.org>

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### Director Sponsorship

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