NACS Newsletter

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Matt Neurock is the recipient of the 2015 Robert Burwell Lectureship in Catalysis



24th NAM June 14-19, 2015 Pittsburgh, Pennsylvania



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Matt Neurock is the recipient of the 2015 Robert Burwell Lectureship in Catalysis



am pleased to announce that Professor
Matthew Neurock of the
University of Minnesota is
the recipient of the2015
Robert Burwell Lectureship in Catalysis of the
North American Catalysis
Society, sponsored by
Johnson Matthey and administered by The North
American Catalysis Socie-

ty. It is awarded biennially in odd-numbered years. The award consists of a plaque and an honorarium of \$5,000. The plaque will be presented during the closing banquet ceremonies at the 2015 North American Meeting of the Catalysis Society. An additional \$4,500 is available to cover travelling expenses in North America.

Professor Neurock will present lectures at the local catalysis clubs and societies during the two-year period covered by this award.

The Robert Burwell Lectureship in Catalysis 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.

Professor Matthew Neurock is being recognized for his seminal contributions to the development and application of theoretical and computational methods to elucidate catalytic mechanisms and the active sites involved. He has pioneered first-principle kinetic Monte Carlo methods that explicitly track molecular transformations on realistic surfaces at relevant conditions, ab initio molecular dynamics methods that describe complex metal-solution interfaces, and ab initio constant potential methods for electrochemical systems to understand and aid the design of catalytic and electrocatalytic systems.

His group has used these methods, together with ab initio quantum chemical treatments, to explore metals, alloys, oxides, sulfides and zeolites and the mechanisms by which they mediate catalysis. These treatments have uncovered previously unrecognized

routes that prevail at the high surface coverages relevant to catalytic practice, the direct participation of protic media as a co-catalyst, and the role of acidbase sites formed by hydroxyl intermediates on metals. His effective collaborations with experimental groups have led to fundamental and practical insights into the mechanisms of alkane activation, Fischer-Tropsch synthesis, selective oxidation and hydrogenation of alkenes and oxygenates, hydrocarbon and oxygenate hydrogenolysis reactions, acid-catalyzed transformations, and electrocatalytic reductionoxidation cycles.

Enrique Iglesia, President North American Catalysis Society

Bruce Cook, Vice President
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The 24th North American
Meeting (NAM) of the North
American Catalysis Society is coming up soon! If you are not already
planning on attending, make your
plans now to attend the meeting
on June 14-19, 2015 at the David L.
Lawrence Convention Center in
Pittsburgh, Pennsylvania!

Since the first NAM in 1969, the NAM meetings have grown into the premier biennial international meetings in catalysis, which offer a

forum for the exchange of the latest discoveries and state-of-theart technologies between industrial and academic researchers and practitioners of catalysis. With a record number of abstract submissions and registrations, we are confident that NAM24 will continue that storied tradition!

The 24th NAM will feature plenary lectures by NACS award winners Hajo Freund (Fritz-Haber-Institute, Berlin), Christophe Coperet (ETH Zürich, Switzerland), and Anne Gaffney (USA), as well as 21 keynote lectures by leaders in their fields of catalysis, 465 oral presentations,

and more than 600 poster presentations.

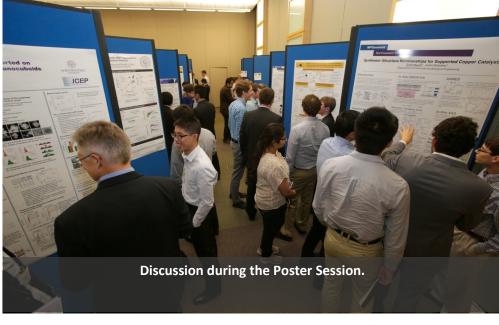
Named America's "Most Livable City" for many years, Pittsburgh is a global model for economic and environmental transformation with a diversified economy. It is a leader in higher education with several world-class universities and over 100,000 students in the greater Pittsburgh area. The city is strategically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

browsing world-class art and natural history museums, kayaking around downtown, or enjoying an evening dinner cruise on the "three rivers" surrounding downtown Pittsburgh.

For more information, and to plan your conference visit, please visit www.NAM24.org.

We look forward to welcoming you to Pittsburgh in June!





Catalysis Club of Chicago

Annual Spring Symposium

he Chicago Catalysis Club held its Annual Spring Symposium at the BP Research Center (150 West Warrenville Road, Naperville, IL 60563) on May 14, 2015.

This annual, regional meeting had over 130 attendees and provided a forum where catalysis in its various forms — heterogeneous to homogeneous, computational to experimental, surface science to materials synthesis, applied

to fundamental, academic to industrial — were discussed.

The program included:

- Herman Pines Awardee Address –
 Fabio Ribeiro (Purdue)
- Keynote Lecture Matt Neurock (Minnesota)
- 2 Invited Lectures Rajamani Gounder (Purdue) and David Flaherty (University of Illinois – Urbana Champaign)
- 6 additional oral presentations from local members
 - 43 poster presentations

The Herman Pines Award is given annually for great achievements of ca-

talysis research in the past five years. The Award in his honor is co-sponsored by UOP, where Herman Pines began his industrial career in 1930 and amassed 145 US patents, and by the Catalysis Club of Chicago of which Herman Pines was a founding member. Strong focuses at the symposium were hydrocarbon transformations, zeolites, reaction mechanism studies, metal catalyzed reactions, materials chemistry approaches to catalysts and anything of interest for energy research. With help from NACS for their support of student involvement, awards were also given to the 3 posters from graduate

students evaluated as the best. Gregory Neumann of the Hicks group at Notre Dame presented "Heteroatom Substituted ZSM-5 for Low Temperature C-C Bond Coupling Reactions", John Di Iorio of the Gounder group at Purdue presented "Ammonia Titration Methods Probe the Dynamic Nature of Brønsted Acid Sites in Cu-SSZ-13 During NOx Selective Catalytic Reduction" and Malek Ibrahim of the Flaherty group at UIUC presented "Selective Catalyst Design for C-C bonds Formation via Alcohol Guerbet Chemistry".

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Catalysis Club of Philadelphia

Spring Symposium

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he Catalysis Club of Philadelphia 2015 spring symposium was hosted by Torren Carlson (Chair Elect) and held at the Double Tree Hotel in Wilmington, Delaware on May 7th. There were 87 in attendance and the program consisted of a full day with eight invited speakers:

- Wei Fan, University of Massachusetts, Amherst
 Development of Hierarchical Zeolite Catalysts for
 Bulky Molecule Reactions
- Dion G. Vlachos, University of Delaware Renewable Chemicals and Fuels from Biomass
- Steven L. Suib, University of Connecticut

 Novel Porous Metal Oxides and Sulfides and Their

 Applications in Adsorption, Batteries, and Catalysis
- Marco J. Castaldi, City College of New York/
 CUNY

The Role of Oxidation State on Regeneration Capacity When Reforming Oxygenated Fuels With Rh Based Catalysts

Robert Farrauto, Columbia University

A Dual Function Material for Capturing and Catalytically Converting CO2 to Synthetic Natural Gas Using Renewable H₂

Hasan Dindi, DuPont

Design of Bimetallic Catalysts for Use in DuPont IsoTherming® Hydroprocessing Reactors

 Cathy H-Y. Chin, University of Toronto

Catalytic Conversion of Renewable Feedstocks to Value-Added Products

 Phillip E. Savage, Penn Stat
 Advances and Applications of Hydrothermal Catalysis

Additionally, the winner of the annual student poster award Bryan Yonemoto was invited to give a talk on the topic of his winning poster: Mesoporous Materials for Energy Applications. For a second season in a row our platinum sponsor HEL Inc. (represented by Graham Hibbert) gave a brief overview of their company's offerings for research scale, multi-reactor and high pressure reactors, processing, testing, equipment and systems. Lastly, Carl Menning (Past Chair) announced the Catalysis Club of Philadelphia Award. This year the award was given to Sourav Sengupta from DuPont for his many contributions to the field of catalysis as well as for mentoring early career researchers in the field.

2015 Catalysis Club of Philadelphia Award



he Catalysis Club of Philadelphia is pleased to announce that Dr. Sourav K. Sengupta, Research Fellow – DuPont Central Research and Development, has been selected as the 2015 Catalysis Club of Philadelphia Award winner. The selection recognizes his significant contributions to the science and practice of catalysis, along with his

efforts in mentoring young scientists.

Dr. Sengupta earned his Ph.D. Chemical Engineering from the University of Delaware in 1991 and has held a variety of research and development assignments at DuPont. He was the founding leader of the Process Development Center for DuPont Chemical Solutions Enterprise and his efforts led to the commercialization of several new specialty chemical products and optimization of several existing catalysts and catalytic processes, which collectively generate tens of millions of dollars.

To achieve these accomplishments, Sengupta applies an in depth understanding of heterogeneous catalyst structure / function relationships in oxide materials, supported metal catalysts and bulk metal catalysts. He was a primary contributor to a novel process for

From Philadelphia, 2015 Award

on-demand hydrogen cyanide production via induction heating of Pt-Rh gauze and optimized oxide supported base metal catalysts for abatement of ozone depleting effluent gases. Recently, Dr. Sengupta has directed his expertise toward the utilization of bio-renewable resources for the production of fuels and chemicals.

Beyond technical contributions, he is recognized for his efforts at mentoring young scientists and engineers. Countless careers have benefited from his technical and organizational insights. He has shared these through formal interactions, such serving as instructor for a short course on Hydrogenation Catalysis and on the board of the Catalysis Club of Philadelphia but more importantly through personal interactions with junior colleagues. The Catalysis Club of Philadelphia is proud to recognize Dr. Sourav Sengupta for his combination of technical excellence and mentoring with the granting of its 2015 award.

Canadian Catalysis Division

2015 R.B. Anderson Awardee

he research of Prof. Johannes A. Lercher (Technische Universität München and Pacific Northwest National Laboratory) addresses fundamental aspects of catalysis, focusing on understanding elementary steps of catalytic reactions on metals, oxides, and sulfides as well as zeolites. Catalytic targets are the low temperature acid catalyzed activation, functionalization, and transformation of alkanes, the oxidative activation of light alkanes including methane, the hydrogenation and deconstruction of large biogenic and fossil molecules such as lignin and multinuclear aromatic molecules. He has co-authored over 470 publications and is the coinventor of 17 patents. Lercher's group has pioneered the use of in situ molecular spectroscopy for characterizing surface reactions, using this information to develop novel complex catalysts. He is the current Editor -in-Chief of the Journal of Catalysis and is a member of the Austrian

Academy of Sciences and the Academia European as well as the President of the European Federation of Catalysis Societies.

Professor Lercher will give two lectures at the 24th Canadian Symposium on Catalysis to be held in Ottawa, ON, Canada May 8-11, 2016. The first lecture will be given on the Sunday afternoon before the opening reception. This educational lecture will be aimed towards graduate students and post-doctoral fellows. The second lecture will be one of the plenary talks at the symposium.

Pacific Coast Catalysis Society

Annual Meeting

he 2015 Annual Meeting of the Pacific Coast Catalysis Society will be held at EMSL, the Environmental Molecular Sciences Laboratory, a national scientific user facility located at Pacific Northwest National Laboratory (PNNL) of Richland, WA, on Friday, September 18, 2015. This annual, regional, one-day meeting will cover a variety of topics in catalysis.

Confirmed invited speakers include: Prof. Charles T. Campbell (U.

Washington; Burwell Lecture), Prof. Bruce C. Gates (U.C. Davis), Dr. Heinz Frei (LBNL), Dr. Miroslaw A Derewinski (PNNL), Prof. Jean-Sabin McEwen (WSU), and Dr. Felix Studt (SLAC).

A poster session and a reception will be held on the evening of Thursday, Sept. 17, 2015. The poster session will be accompanying the poster session for the EMSL Annual User Meeting. The user meeting, "Integration 2015", will focus on Energy Materials and Processes for Advanced Batteries and Catalysis.

For further information regarding the 2015 PCCS Annual Meeting, e.g., abstract submission, registration, and schedule, please visit http://www.emsl.pnl.gov/emslweb/pacific-coast-catalysis-society-meeting-2015.

Please note that the deadline for abstract submission is July 1, 2015.

For any additional questions or assistance, please contact one of the coorganizers, Huamin Wang (PNNL; Huamin.Wang@pnnl.gov), Feng Gao (PNNL; Feng.Gao@pnnl.gov), and Charles H.F. Peden (PNNL; Chuck.Peden@pnnl.gov).

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Catalysis Society of Metropolitan New York

he Catalysis Society of Metropolitan New York held its Annual Symposium at New Jersey Institute of Technology in Newark, New Jersey, on March 18, 2015. The Symposium featured eight invited oral presentations led by a keynote lecture by Prof. Gary Haller. The symposium was attended by more than 150 participants. The group photo below shows all the speakers hosted by Dr. Zhong He, Society Chairelect. From left to right are Dr. Zhong He (Primus Green Energy); Dr. Gary L. Casty (ExxonMobil Research and Engineering); Dr. Dirk Demuth (BASF Corporation); Professor Xiangin Wang (New Jersey Institute of Technology); Dr. Christopher Marshall (Argonne National Laboratory); Professor Lindsey A. Welch (Cedar Crest College); Dr. Anders Laursen (Rutgers University); Professor Hongliang Xin (Virginia Polytechnic Institute and State University); Professor Gary Haller (Yale University).



Graduate students and postdoctoral researchers participated in a poster competition with 50 poster presentations. Eight winners including two Honorable Mentions were selected in the graduate student category, and one winner was selected in the postdoctoral researcher category. Each of the winners received a cash award and a certificate.

The student winners were:

First place (tie):

- Bin Liu (<u>pictured in the left photo below</u>)
 "Perovskite-Related Oxynitrides as Photoanodes in Photoelectrochemical Cells", advisor Charles Dismukes, Rutgers University.
- Jing Luo "Comparison of HMF Hydrodeoxygenation over Different Metal Catalysts in a Continuous Flow Reactor", advisor Raymond J. Gorte, University of Pennsylvania.

Second place (tie):

- Sneha A. Akhade "Studying the Reaction Mechanisms of CO₂ Electroreduction on Transition Metal Electrocatalysts Using Density Functional Theory", advisor Michael J. Janik, Pennsylvania State University.
- Yiteng Zheng/Muye Yang "Structure and Mobility of Cr Oxide Species on ZSM-5 Zeolites", advisor Simon G. Podkolzin, Stevens Institute of Technology.

Third place (tie):

 Jie Fu "Structure of Pd-based Bimetallic Model Surfaces and Their Reactivities Towards Alcohol

- Decomposition", advisor Bruce E. Koel, Princeton University.
- MyatNoeZin Myint "Controlling the Reaction Pathways of C3 Oxygenates on Mo(110) and Co/ Mo(110)", advisor Jingguang G. Chen, University of Delaware.

Honorable Mention (tie):

- Marc D. Porosoff "Molybdenum Carbide as Alternative Catalysts to Precious Metals for Highly Selective Reduction of CO₂ to CO", advisor Jingguang G. Chen, Columbia University.
- Maocong Hu "Effect of Azide Loading on Catalytic Performance of NaN₃-Pd/SAC Catalysts for Acetylene Hydrogenation", advisor Xianqin Wang, New Jersey Institute of Technology.





In the postdoctoral researcher category, the firstplace winner was George Tsilomelekis (pictured in the right photo above) with the poster presentation "Understanding the Effect of Polar Aprotic Cosolvents on 5-HMF Production", advisor Dion Vlachos, University of Delaware.

NACS Newsletter

From Catalysis Society of Metropolitan New York

2015 Excellence in Catalysis Award



The **2015** Excellence in Catalysis Award was awarded to the *BASF SCR Catalysis Team* of Ivor Bull, Wen-Mei Xue, Patrick Burk, Samuel Boorse, William M. Jaglowski, Gerald S. Koermer, Ahmad Moini, Joseph A. Patchett, Joseph C. Dettling, and Matthew T. Caudle (initial team) of BASF Corp in Iselin, NJ. This Award recognized the team's innovative contribution of copper chabazite to improve low temperature NOx reduction activity in mobile applications.

The Excellence in Catalysis Award dinner took place May 20, 2015 at the La Quinta Inn & Suites, Somerset NJ. Dr. Wen-Mei Xue, was presented a plaque and cash award on behalf of the team. The presenter was Dr. Patty Bielenberg (pictured above) of ExxonMobil Research and Engineering Company, the sponsor of the Award. Dr. Wen-Mei Xue is pic-

tured on the left. The Award lecture entitled "Cu-CHA Selective Catalytic Reduction (SCR) Catalyst for Automotive Exhaust Clean-up" was presented by Dr. Wen -Mei Xue of BASF Corporation.

Executive Committee Election 2015-2016

Election to the CSNY Executive Committee for the 2015-2016 season was held both on site (May 20th meeting) and via email in accordance with CSNY bylaws.

From left to right are Prof. Taejin Kim (Director-Membership, Stony Brook University); Prof. Marco Castaldi (Director, CUNY); Dr. John Byrne (Director,



BASF Corporation); Dr. Zhong He (Chair, Primus Green Energy); Prof. Fuat Celik (Chairman-Elect, Rutgers University); Ashley Pennington (Student Representative, Rutgers University); Dr. Ke Xiong (Secretary, Ingredion Inc.); Dr. Lucas Dorazio (Director, BASF Corporation); John Brody (Treasurer, ExxonMobil); Dr. Xiaoming Wang (Past Chair, BASF Corporation).

Officers absent in May meeting are Prof. Israel Wachs (NACS Representative, Lehigh University) and Dr. Roel Sanchez (Webmaster, BASF Corporation).

Organic Reactions Catalysis Society

he Organic Reactions Catalysis Society will hold its 26th biennial meeting at the Hyatt Regency in Miami, FL March 27-31, 2016. Please see www.orcs.org for updates and information. Topics will include chemicals production from bio-renewable resources, coupling reactions with transition metals, enantioselective transformations, selective oxidation, acid catalyzed transformations, hydrogenation, novel materials for organic synthesis, and synthesis of fine chemicals and pharmaceuticals.

The conference will include an optional short course on reactor selection and design. Numerous travel grants will be awarded to students and post-docs giving either oral or poster presentations.

ORCS is also seeking nominations for the following awards. The 2015 and 2016 Paul N. Rylander Awards will be awarded to individuals who have made significant contributions to the use of catalysis in organic reactions. The 2016 Murray Raney Award will be awarded to an individual who has made significant contributions to chemistry and the chemical industry using base metal catalyst technology. Award nominations will be due August 2, 2015.

Rocky Mountain Catalysis Society

2015 Symposium

he Rocky Mountain Catalysis Society held its first annual symposium on March 26th in Denver, CO at the Hyatt Regency Hotel, which will be the site of the 25th NAM in 2017. Approximately 35 engineers and scientists were in attendance to present their research and to hear the keynote speaker, Dr. Paul T. Barger, the current Ciapetta Lecturer. Dr. Barger gave an excellent presentation on "UOP Advanced MTO Technology – A New Route for the Production of Light Olefins." Special thanks to Professor Will Medlin for organizing the symposium.

Other speakers represented
Brigham Young University; Colorado
School of Mines; the National Renewable Energy Laboratory; the University of
Colorado, Boulder; the University of
New Mexico; and the University of Wyoming.

Seven graduate students were recognized with awards for their presenta-

tions. Our judges, who included Anne Gaffney from the Idaho National Laboratory and Singfoong Cheah from the National Renewable Energy Laboratory, had a difficult assignment, but collectively chose the following students to receive awards:

- 1st Sam Gage, Colorado School of Mines, "Development of Nickel Nitride Catalysts"
- 2nd Shuai Tan, University of Wyoming, "From Micro- to Nanoscale: a Novel Synthesis Approach of Lanthanide Oxysulfide Catalysts and Their Application in Sulfur-free and Sulfur-laden Water Gas Shift Reaction
- 3rd/Honorable Mention: Sarah Shulda, Colorado School of Mines, "Preparation and Characterization of Magnesium Oxide and Nickel Oxide Nanostructures with Polar Surfaces"
- 3rd/Honorable Mention: Lucas Ellis, University of Colorado, Boulder, "Controlling the selectivity of metal oxide catalysts using silanes and phosphonates for polyol dehydration"

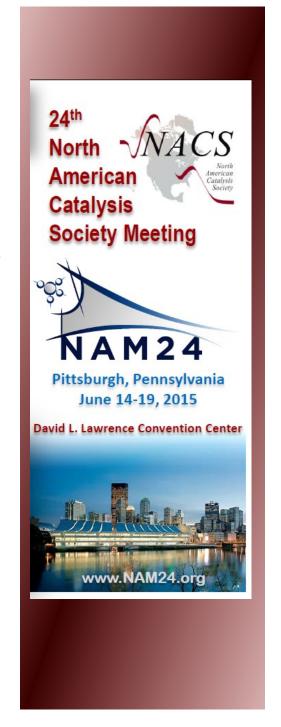
 3rd/Honorable Mention: John Jones, University of New Mexico, "Trapping Platinum on Ceria: Role of Surface Facets"

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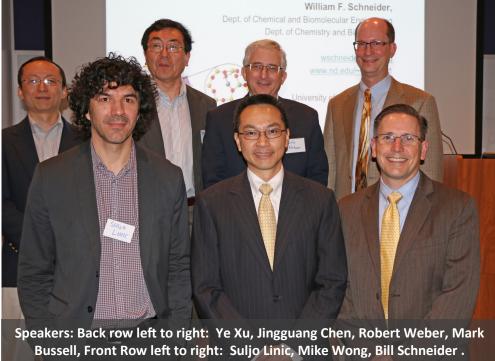
 3rd/Honorable Mention: Chen Zhang, University of Wyoming, "Aqueous Phase Hydrodeoxygenation of Glycerol with Bimetallic Overlayer Catalysts"

A grant of \$1000 from the NACS paid the registration fees for 13 graduate and undergraduate students who presented their research at the meeting.

The Society's directors spent the morning in discussions and facilities tours in preparation for hosting the 25th North American Meeting (NAM), which is scheduled for June 4-9, 2017 in Denver, CO at the Hyatt Regency Hotel.







Southwest Catalysis Society

Symposium Summary

he 2015 SWCS Symposium was held April 24, 2015 on the University of Houston campus. Over one hundred students, faculty, and industrial scientists attended the meeting. The speakers included

Dr. Robert Weber (PNNL)

- Professor Suljo Linic (Michigan)
- Professor William Schneider (Notre Dame)
- Professor Jingguang Chen (Columbia)
- Professor Mark Bussell (Western Washington)
- Professor Ye Xu (Louisiana State)
 The student poster session had

 24 entries, five of which were recognized with awards. The 2015 SWCS
 Excellence in Applied Catalysis Award

winner was Professor Michael Wong (Rice University). Mike gave a moving tribute to Professor Joe Hightower, who was one of the founding members of the SWCS who passed away in the last year.

The SWCS continues to benefit from an outstanding base of academic and industrial scientists in the Southwest Region. For anyone wishing to learn more about the SWCS please email Professor Dan Shantz at dshantz@tulane.edu.

We hope to se everyone next year!

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