

# NACS Newsletter

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American Awards Presentedis by NACS

Houdry Award







**Ciapetta Award** 

Service Award



Javier Pérez-Ramírez **Emmett Award** 





**Enrique** Iglesia Abhaya Datye **Burwell Award Boudart Award** 

# Letter form the President

Jingguang Chen, Columbia University & Brookhaven National Laboratory; Vice-President -Christopher Jones, Georgia Institute of Technology; Secretary -Javier Guzman, ExxonMobil; Treasurer - Beata Kilos, Dow Chemical Company; Lead Trustee - Thomas F. Degnan, Jr., University of Notre Dame; Communications Director - Edrick Morales, Sasol (USA) Corporation.

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Datye, University of New Mexico; Jim Dumesic, University of Wisconsin; Maria Flytzani-Stephanopoulos; Tufts University; Bruce C. Gates, University of California at Davis; Fabio H. Ribeiro, Purdue University; Stuart L. Soled, ExxonMobil.

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The North American Catalysis Society sponsors six prestigious awards and lectureships to recognize the accomplishments of catalysis scientists and to promote the advancement of catalysis science in North America and world-wide. The 2019 awardees and their outstanding ac-

complishments are described in this Newsletter.

The awardees will be recognized at the award banquet during the biennial North American Meeting (NAM), to be held in Chicago on June 23-28, 2019. We look forward to seeing you in Chicago!

Jingguang Chen President, North American Catalysis Society



The 26<sup>th</sup> meeting of the North American Catalysis Society, NAM26, will be held in the great city of Chicago in 2019! A Letter of Invitation can be downloaded here.

This meeting marks 50 years since the first NAM in 1969 in Philadelphia. In these past 50 years, the North American Meeting has become the preeminent biennial meeting of catalysis science and technology. Throughout this meeting, we will be looking back at the evolution of the study of catalysis over the past fifty years, but also looking forward to the next fifty. Although some of the tools have changed, and the discipline has become larger and more alobal, many of the same fundamental auestions remain, rooted as they are in the basic desire to design, control, and understand catalyst structure – and therefore function – from a single atom to a reactor, and from a single elementary step to years time on stream. As has been true for 50 years, this meeting will feature talks from leading researchers and practitioners from around the world, bustling poster sessions to cross-fertilize ideas, and plenty of opportu-

nities to catch up with colleagues new and old.

As part of the 50th anniversary celebration, we invite everyone to contribute on our history page NAM at 50, on Twitter.

- For some of you, this will be your first meeting. Welcome! What do you want out of this meeting? Why do you study catalysis?
- For others, this may be your 2nd or even your 26th meeting.
   What has been your most memorable NAM experience?
   A talk that led to special insight? A packed hall hearing you speak? A chance meeting between sessions that led to your 1st (or 4th) job?
- For everyone, what do you think will be the next big thing? What might be the breakthrough that will make the

2069 meeting so different from this one?

Whatever the answers, we look forward to seeing you in Chicago, June 23-28, 2019! Please contact us at chairs@nam26.org.

Sincerely,

Paul T. Barger Senior R&D Fellow UOP LLC, a Honeywell company Meeting co-chair

Justín M. Notesteín Professor of Chemical and Biological Engineering Northwestern University Meeting co-chair

Online registration has closed. You may still register on-site at the meeting.

# Teh Ho is the recipient of the 2018 F.G. Ciapetta Lectureship in Catalysis

am pleased to announce that Dr. Teh Ho of ExxonMobil (Retired) is the recipient of the 2018 F. G. Ciapetta Lectureship in Catalysis sponsored by W. R. Grace & Co. It is awarded biennially in even-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 2019 North American Meeting of the Catalysis Society.

Dr. Ho will be invited to present lectures at the local catalysis clubs and societies during the two -year period covered by this award.

The F. G. Ciapetta Lectureship in Catalysis is given in recognition of substantial contributions to one or more areas in the field of catalysis with emphasis on industrially significant catalysts and catalytic processes and the discovery of new catalytic reactions and systems of potential industrial importance.

Teh Ho has recently retired from ExxonMobil's corporate research laboratory after a 37-year industrial career (including 4 years with Halcon R&D Development Corp). He continues to spend his spare time writing papers on catalysis and reaction engineering. He has been a prolific author, writing comprehensive reviews on hydrodenitrogenation, hydrodesulfurization, and process modeling.

Teh had spent a large fraction of his career in probing reaction kinetics of several industrially important areas with particular emphasis on sulfide catalysis and the role of hydrogenation vs hydrogenolysis and the influence of basic vs. non-basic organonitrogen species as inhibitors. To overcome the difficulties of characterizing highly disordered sulfide catalysts, he developed a dynamic technique to determine the number of catalytic active sites and the structure-activity relationship for hydrodesulfurization catalysts. His work has always used high-level modeling for gaining predictive understanding.

He is the recipient of 2002 Thomas Alva Edison Patent Award of the Research Council of New Jersey, the 2002 Catalysis and Reaction Engineering Practice Award of the AIChE, the 2004 AIChE Wilhelm Award, the 2006 AIChE Evans Chemical Engineering Practice Award. He capped off his industrial career with induction into the National Academy of Engineering in 2016.

Citation: "Catalytic removal of sulfur and nitrogen from hydrocarbons for manufacturing clean fuels and petrochemicals."

*Christopher W. Jones* VP, North American Catalysis Society

### Alexis T. Bell is the recipient of the 2018 NACS Award for Distinguished Service in the Advancement of Catalysis

am pleased to announce that Prof. Alexis T. Bell is the recipient of the 2018 NACS Award for Distinguished Service in the Advancement of Catalysis. The award is co -sponsored by ExxonMobil and Clariant. It is awarded biennially in even-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 2019 North American Meeting of the Catalysis Society.

The NACS Award for Distinguished Service in the Advancement of Catalysis is given to a person who has advanced catalytic chemistry or engineering by significant service to the catalysis community in addition to their technical accomplishments.

Alex Bell's distinguished service to the catalysis community has significantly advanced the field through a wide variety of leadership positions. He has been the Editor in Chief of <em>Catalysis Reviews – Science and Engineering and Chemical Engineering Science</em>. In addition, Alex has taken leader-

ship roles that have greatly impacted catalysis. He was appointed as Chair of a Panel on New Directions in Catalytic Science and Technology for the National Research Council from 1989-91. He organized a workshop on the subject and led the writing of a report entitled <em>Catalysis Looks to the Future</em>. Oral presentations based on the report were made to House and Senate committees dealing with science and technology. The findings of the report served to launch and strengthen research programs in catalysis in many parts of the world and provided direction and supporting information for many research proposals submitted in the US. Alex has also served in leadership positions for workshops designed to help shape DOE programs that impact catalysis. In addition to these special assignments Alex has also taken on

leadership roles in the NACS and international catalysis societies. Alex established this record of service while advancing the knowledge of catalysis with the publication of over 700 technical publications, with an h-index of 111. He has established leadership roles in mechanistic studies using vibrational spectroscopies and kinetic analysis for a variety of catalytic reactions, and applications to catalysis of theory ranging from molecular dynamics to bond order conservation methods to density functional theory. This most impressive body of work has been widely recognized, including election to the National Academies of both Engineering and Science.

The time required for these tasks was substantial, but the benefits to the catalysis community were huge and made possible only by Alex's unique combination of skill and commitment. The community is very thankful to Alex for these important contributions.

*Christopher W. Jones* VP, North American Catalysis Society

# Hai-Ying Chen is the recipient of the 2019 Eugene J. Houdry Award in Applied Catalysis

am pleased to announce that Dr. Hai-Ying Chen of Johnson Matthey is the recipient of the 2019 Eugene J. Houdry Award in Applied Catalysis sponsored by Clariant.

The Eugene J. Houdry Award in Applied Catalysis 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. 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 2019 North American Meeting of the Catalysis Society (NAM26) in Chicago. Dr. Chen will also present a Plenary Lecture at the 2019 North American Meeting of the Catalysis Society in recognition of this honor.

Dr. Chen is recognized for his outstanding contributions to advancing the capabilities of catalytic converters for automotive exhaust emission control – a field pioneered by Eugene J. Houdry

more than 60 years ago. Dr. Chen and his team at Johnson Matthey have developed and industrialized many innovative catalyst technologies for cleaning air pollutants from exhaust emissions. These include the development of NOx adsorber catalysts for diesel pickup trucks to meet stringent US EPA 2010 emission standards in 2007; the discovery and commercialization of a group of smallpore zeolite supported Cu catalysts for the selective catalytic reduction of NOx for heavy-duty diesel trucks to meet low NOx emission regulations in 2010; and the most recent invention of Pdzeolite based diesel cold start concept catalysts that help fuelefficient vehicles meet stricter future environmental regulations. Millions of emission control catalysts and systems that contain the technologies developed by Dr. Chen and his team have been installed on vehicles. This has resulted in millions of tons of reduction in air pollutants, which significantly benefits our environment and society.

Dr. Chen received his Ph.D. in Chemistry from Fudan University, Shanghai, China. He conducted postdoctoral research at Northwestern University, Evanston, Illinois. He has published more than 60 technical papers and holds more than 140 granted patents in various jurisdictions around the world.

#### Citation:

For outstanding contributions to advancements in catalyst technologies and science for diesel exhaust emission control.

# Javier Pérez-Ramírez is the recipient of the 2019 Paul H. Emmett Award in Fundamental Catalysis

Dr. Javier Pérez-Ramírez of ETH Zurich is the recipient of the 2019 Paul H. Emmett Award in Fundamental Catalysis, sponsored by W. R. Grace & Co. This prize 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 banauet ceremonies at the 2019 North American Meeting of the Catalysis Society. Dr. Pérez-Ramírez will present a Plenary Lecture at the 2019 North American Meeting of the Catalysis Society (NAM26, in Chicago).

am pleased to announce that

The Paul H. Emmett Award in Fundamental Catalysis recognizes and encourages 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 2019 award recognizes Professor Pérez-Ramírez for significant contributions to the design of catalytic materials and process concepts to solve energy, re-

source, and environmental challenges of society at large. He has developed catalysts that enable pioneering selective routes for CO<sub>2</sub> hydrogenation to methanol and halogenmediated functionalization of natural gas components, as well as for conversion of renewables to chemical building blocks. He has advanced techniques for nanostructuring of noble metals in the form of defined ensembles or single atoms. This has enabled key sustainability targets, such as the avoidance of harmful modifiers for liquid-phase alkyne hydrogenation. The thread of his research combines creative discovery with advanced structural and mechanistic understanding, emphasizing the bridge between the molecular level and application at the

technical scale.

Citation:

For the design of innovative catalytic processes to address energy, resource, and environmental challenges.

*Christopher W. Jones* VP, North American Catalysis Society

## Enrique Iglesia is the recipient of the 2019 Michel Boudart Award for the Advancement of Catalysis

V that Professor Enrique Iglesig of the University of California at Berkeley is the recipient of the 2019 Michel Boudart Award for the Advancement of Catalysis. The award is presented jointly by the North American Catalysis Society (NACS) and the European Federation of Catalysis Societies (EFCATS). The award is supported by the Haldor Topsøe Company and is awarded biennially in oddnumbered years. Professor Iglesia will give plenary lectures at the 2019 NACS and EFCATS meetings. The award consists of a plaque and a prize of \$6,000. The plaque will be presented during the closing banquet ceremonies at the 2019 North American Meeting of the Catalysis Society (NAM26 in Chicago). The Michel Boudart Award

The Michel Boudart 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/or practice of heterogeneous catalysis.

Professor Enrique Iglesia and his research group have advanced the desian, synthesis, and structural and mechanistic characterization of solid catalysts for chemical reactions involved in the production, conversion, and use of energy carriers, in sustainable syntheses of chemicals and intermediates, and in the protection of the environment. These advances exploit novel protocols for the synthesis of well-defined nanostructures and isolated uniform sites within porous solids, as well as techniques that probe the local structure and atomic connectivity in these materials, in most instances as catalytic turnovers occur. His research approach, in the spirit and teachings of his mentor, Professor Michel Boudart, is underpinned by chemical kinetics, spectroscopic probes, thermodynamic cycles, transition state theory, and statistical mechanics and quantum methods for the purpose of elucidating the essential features of the relevant surface chemistry and the nature of the required active sites. His most recent work has brought together solvation effects on reactivity and

selectivity induced by confinement and by dense phases, whether liquid or adsorbed layers, into a unifying conceptual framework. In doing so, these studies have led to the more accurate and explicit isolation of the respective effects of the binding point and the reaction environment on transition state stability, thus allowing the definition of more complete descriptors of site reactivity in oxidation and acid catalysis. The relevance of his research to the practice of catalysis is evident from his many patents, several of which have enabled improvements in catalytic processes for the conversion of natural gas and oxygenates to fuels and chemicals as well as the broader application of zeotypes in chemical syntheses and environmental control.

Jingguang Chen President, North American Catalysis Society

# Abhaya Datye is the recipient of the 2019 Robert Burwell Lectureship in Catalysis

am pleased to announce that Professor Abhaya Datye of the University of New Mexico is the recipient of the 2019 Robert Burwell Lectureship in Catalysis, sponsored by Johnson Matthey and administered by the North American Catalysis Society. It is awarded biennially in odd-numbered years. The award consists of a plaque and an honorarium of \$5,000, which will be presented at the award banquet at the NAM26 Chicago meeting. An additional \$4,500 is available to cover travelling expenses in North America. The awardee is expected to lecture at many of the local catalysis clubs.

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. The awardee is selected on the basis of his/her contributions to the catalytic literature 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.

Professor Abhaya Datye and his research group have performed elegant and creative experiments that have clarified relationships between the atomiclevel structure of heterogeneous catalysts and their reactivity and/ or stability. He has introduced new approaches to doing catalysis research (e.g., model catalysts and sample preparation techniques) that enabled the use of electron microscopy to study industrially relevant catalysts. He thus elucidated important fundamental concepts that are crucial for designing catalysts for improved performance. He showed how catalytic activity is enhanced due to oxidation-induced roughening of metal surfaces in nanoparticles, and how phase transformations in Fe Fischer-Tropsch catalysts can cause catalyst attrition.

A major contribution was the use of electron microscopy and sinterina rate equations to uncover atomic-scale mechanisms of catalyst sintering. Recently, his group described a method for generating stable monomeric Pt species on the surfaces of a ceria support, termed atom trapping. In this work, high temperatures, which normally destroy catalysts, enable the synthesis of thermally stable single atom catalysts (SACs). By studying the trapping of mobile atoms on the support, his group has improved our fundamental understanding of catalyst regeneration. These insights have led to many creative ideas for new sinter -resistant catalyst materials that have great industrial relevance.

### Awards Presented by the North American Catalysis Society

The North American Catalysis Society sponsors six prestigious awards and lectureships to recognize the accomplishments of catalysis scientists and to promote the advancement of catalysis science in North America and world-wide.

Three of these awards include plenary lectures at NACS biannual meetings (Eugene J. Houdry Award in Applied Catalysis, Paul H. Emmett Award in Fundamental Catalysis, Michel Boudart Award for the Advancement of Catalysis, the latter jointly presented with the European Federation of Catalysis Societies). The F.G. Ciapetta and Robert Burwell Lectureships in Catalysis involve lectures at local club meetings and the presentation of the awards at the NACS meeting banquet. The NACS Award for Distinguished Service in the Advancement of Catalysis is the most recent recoanition instituted by the Society. All of these awards are presented every two years and the nomination deadlines are listed in below. Additional information is available in the NACS website: http:// nacatsoc.org/awards/.

#### Canvassing and Nomination Processes

NACS encourages all nominations for these awards and nominators and nominees need not be NACS members. The President instructs the Vice President to form a canvassing committee for each cycle of every award to ensure a full slate of outstanding candidates. This committee is led by the NACS Vice-President and consists of previous award recipients and recognized experts within the catalysis community at-large. The committee identifies worthy candidates and its Chair seeks nominators for these candidates, but provides no specific guidance about the preparation of the nomination packages beyond that provided on the NACS web site. The Chair also instructs the Secretary to contact all NACS local representatives to request that they canvass for nominations within their local sections. All nomination deadlines and cycles are also announced in the quarterly NACS newsletter.

#### Award Recipient Nomination Process

The jury that selects each NACS award recipient consists of scientists and engineers recognized as experts and representing industry, academia, and national labs. The members of this jury must have no affiliation with any of the nominees and are specifically asked to disclose any conflicts of interest and to disgualify themselves without prejudice when a conflict exists. The selection jury is appointed by the NACS President, who seeks auidance in selectina its members from the Vice President and from senior members of the catalysis community. The identity of the jury members is kept in the strictest confidence and known only to the President: the members are also required to keep their participation in these committees confidential.

The NACS President provides the jury with the nomination packages for all candidates within two weeks of the deadline: in the intervening time, potential jury members are asked about their willingness to serve. The members of the jury rank the candidates and provide specific details for their selection in the case of the top three candidates. In some cases, jury members are asked to again rank the top two candidates side-by-side, after considering their respective nomination packages once again.

The recipient of the Award and his/her nominators are informed of the decision of the jury, followed by notification of jury members and of nominators of the other candidates. A formal announcement, composed by the President in consultation with the recipient and the nominator, is published in the NACS web site and the NACS newsletter and soon thereafter in Chemical and Engineering News. The awards are all presented at the biennial NACS meeting, where the respective citations are read and the award winners receive a plaque.

The NACS community at-large deserves congratulations and thanks for the excellent cadre of nominees that it has put forth and chosen and for their dedication as nominators and as members of the jury.

#### Awards

• The F. G. Ciapetta Lectureship in Catalysis (prior to 1973 The National Lectureship)

- This award is sponsored by the W.R. Grace & Co. and The North American Catalysis Society.
- Deadline: 8 November 2019
- Webpage: http:// nacatsoc.org/awards/ ciapetta/

#### Award for Distinguished Service in the Advancement of Catalysis

- This award is awarded by the North American Catalysis Society and sponsored by ExxonMobil and Clariant.
- Deadline: 22 May 2020
- Webpage: http:// nacatsoc.org/awards/ service/
- Eugene J. Houdry Award in Applied Catalysis
  - Award sponsored by Clariant and administered by The Catalysis Society.
  - Deadline: 24 July 2020
  - Webpage: http:// nacatsoc.org/awards/ houdry/
- Paul H. Emmett Award in Fundamental Catalysis
  - Award sponsored by the W.R. Grace & Co. and administered by the North American Catalysis Society.
  - Deadline: 25 September 2020
  - Webpage: http:// nacatsoc.org/awards/ emmett/
- Michel Boudart Award for the Advancement of Catalysis
  - This award is sponsored by the Haldor Topsøe Company and administered jointly by the North American Catalysis Society and the European Federation of Catalysis Societies.
  - Deadline: 6 November 2020

- Webpage: http:// nacatsoc.org/awards/ boudart/
- The Robert Burwell Lectureship in Catalysis
  - Sponsored by Johnson Matthey and administered by The North American Catalysis Society.
  - Deadline: 22 January 2021
  - Webpage: http:// nacatsoc.org/awards/ burwell/

Award Deadlines Ciapetta 8 November 2019

> Service 22 May 2020

Houdry 24 July 2020

Emmett 25 September 2020

Boudart 6 November 2020

Burwell 22 January 2021

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# 17<sup>th</sup> International Congress on Catalysis June 14-19, 2020 San Diego, California — www.2020icc.com



# **2020 VISION FOR CATALYSIS**

#### INVITATION

The organizing committee cordially invites you to attend the 17<sup>th</sup> International Congress on Catalysis that will be held from June 14-19, 2020 in San Diego, California, USA. The ICC 2020, with the theme of "**2020 Vision for Catalysis**", will bring together our international community to share knowledge, bridge intellectual gaps, advance our science, and celebrate the talents and achievements of the most accomplished practitioners of our discipline.

#### CORRESPONDENCE

info@2020icc.com

#### TOPICS

- C1 Chemistry
- H2 Generation and Use
- Electrocatalysis and Photocatalysis Fundamentals
- Environmental Catalysis
- Conversion of Biomass and Biomass-derived Molecules
- Catalysis with Ordered Porous Materials
- Theory and Computation in Catalysis
- Catalysis in Nitrogen Chemistry
- Catalysis with Supported Metals
- Catalyst Deactivation
- Functionalization and Conversion of C2 C5 Paraffins
- Syngas Generation and Use
- Reaction Engineering
- Heteroatom Removal
- Carbon-Carbon and Carbon-Heteroatom Bond
  Formation
- In-situ and Operando Analysis
- Catalysis for Chemical Synthesis
- Catalyst Synthesis and/or Characterization
- Catalytic Cracking
- Catalysis with Oxides



#### **KEY DATES**

- June 1, 2019 Call for abstracts
- October 31, 2019 Deadline for abstract submission
- February 28, 2020 Acceptance notification
- May 1, 2020 Deadline for early registration
- June 11, 2020 Deadline for online registration

#### **Club Directory**

#### Canada Catalysis Division – CCD

Website:www.catalysisdivision.ca

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-1969-**Fifty Years of NAM** 

León

President

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Representative to NACS

Catalysis Society of Metropolitan New York – CSNY

Website: www.nycsweb.org

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#### **Organic Reaction Catalysis Society –** ORCS

Website: orcs.org/

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#### Pacific Coast Catalysis Society – PCCS

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CHICAGO

-1969-**Fifty Years of NAM** 

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