NACS Newsletter

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North American Meeting San Francisco – June 7 to 12, 2009

he organization of the 2009 NAM is progressing on schedule. The meeting will be held at the Hyatt Regency Hotel, located at the Embarcadero waterfront in San Francisco. The meeting co-chairs are Bruce Gates, Enrique Iglesia, and Charles Wilson. All available details have been posted on the meeting website (www.21nam. org); inquiries should be directed to nam21-info@pnl.gov. The first circular will be mailed by the end of April 2008.

Catalysis finds itself as the critical discipline as the world at large faces the challenges of sustainable development, clean energy, and environmental responsibility. The 2009 NAM will bring together leading international researchers in catalysis at a geographical and historical crossroads

between Asia and the world. Our aim is to promote academic and industrial connections among emerging and established communities of researchers and practitioners of catalysis in the world at large.

The planned session topics include:

- ► Catalysis for Energy
- Catalysis for Environmental Protection
- ➤ Catalysis for the Synthesis of Chemicals
- ► Fundamentals of Catalysis
- ➤ Chemical Reaction Engineering

The time line is as follows:

August 1, 2008 - call for papers and applications for Kokes Student Travel Awards.

November 15, 2008 - deadline for submission of abstracts and Kokes

applications, to be made via the meeting web site.

February 9, 2009 - notification of accepted abstracts for oral and poster presentations and awarded Kokes grants.

April 1, 2009 - deadline for early registration.

21st NAM

San Francisco, California 2009

www.21nam.org

New Members Elected to the National Academy of Engineering

he National Academy of Engineering (NAE) has elected 65 new members and nine foreign associates, Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature," and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."

Two in our catalysis community include > Enrique Iglesia, Chancellor Professor, depart-

ment of chemical engineering, University of California, Berkeley. For outstanding contributions to the understanding of catalyst structure-function relationships, the development of novel catalysts, and leadership in the field of catalysis. > Rutger Anthony van Santen, professor, department of chemical engineering and chemistry, Eindhoven University of Technology, Eindhoven, Netherlands. For pioneering work on the fundamentals of reaction mechanisms in heterogeneous catalysis.

Short Notes

What is Catalysis or Catalysts, So what?

Our feature article on page 4 of this Newsletter is intended to explain what catalysis is to those unfamiliar with the term. Countless times, I've been asked about what is catalysis from persons of differing backgrounds: immigration officials, foursomes on a golf course, executives in airplanes, or neighbors. To those of us who work in the field, we see tremendous value which has repeatedly been supported by surveys of the impact of catalysis upon financial measuring tools, like the GNP, but we need to be able to explain our profession to those not familiar with the technology. So, in this sub-folder, I've tried to explain what catalysis is to those who are not familiar with our science.

This is a new feature posted at the top of the list of sub-folders of the NACS web site. Suggestions or ways to enhance the message are welcome. Bob Farrauto (BASF) and Enrique Iglesia (University of California, Berkeley) contributed suggestions to this new folder.

John Armor

Board of Directors

Our next Board meeting will be on Sunday at the beginning the Fall ACS meeting in Philadelphia: 5:30pm on August 17, 2008. The President will email Board members with further details.

New Video Clip available featuring Dr. Haldor Topsøe

We have added a new video clip of the first five minutes of an interview with Dr. Haldor Topsøe. This may be viewed by going to the "History of Catalysis" folder on the NACS web site; then select "Haldor Topsøe" under Historical Video Clips.

John Armor and Burt Davis

On-line Voting

We are planning to use on-line voting for the At Large Board member elections in January 2009. This will require up-todate email addresses from each member. Our mailing list is based on the local clubs membership and the North American Meeting lists. It is critical that local clubs provide an updated mailing list of their members. Additional details will be forthcoming in the next newsletter.

Nominations due May 1, 2008 for Eugene J. Houdry Award in Applied



he Eugene J. Houdry Award in Applied Catalysis is sponsored by Süd-Chemie, Inc. It is administered by The Catalysis Society and is awarded biennially in odd numbered years, generally at the North American meeting of The Catalysis Society, where the awardee will be asked to give a plenary lecture. The award consists of a plaque and a prize

of \$5,000. An additional \$1,000 is available for otherwise unreimbursed travel expenses.

The purpose of the Award is to recognize and encourage 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.

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. Nominations

for the Award must be made before May 1, 2008 and should present the nominee's qualifications, accomplishments and biography. A critical evaluation of the significance of publications and patents should be made as well as a statement of the particular contribution(s) on which the nomination is based. Nomination documents should be submitted electronically to the President of the Society in one complete package along with no more than two seconding letters.

All nomination packages (one electronic copy) for the Houdry Award should be should be sent to John Armor, President, North American Catalysis Society; at jnagcat@verizon.net . Receipt of any nomination, will be confirmed by an email message sent to each nominator.

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What is Catalysis or Catalysts, So what?

atalysis is a technology which increases the rate of a chemical reaction. This technical field employs both scientists and engineers. Catalysts are the materials used by these persons to explore the phenomenon of catalysis. Catalysts are materials which speed up chemical reactions without the catalyst being consumed; they are materials which induce change. More specifically, catalysts are materials which change the rate of attainment of chemical equilibrium without themselves being changed or consumed in the process. Catalysts also provide selectivity or specificity to particular products which are more desirable than others. All these attributes about catalysis and catalysts translate to energy savings, less pollution, fewer side products, lower cost reactor materials, and ultimately products which reduce global warming. It has been said (A. Mittasch) that "chemistry without catalysis would be a sword without a handle ... or a bell without sound."

Catalysis is the key to both life and lifestyle. It is an essential technology for chemical and materials manufacturing, for fuel cells and other energy conversion systems, for combustion devices, and for pollution control systems which greatly impact everyone on our planet. Some other specific examples of what catalysts do include applications for:

Fuels & Energy: Over half the world's gasoline is currently produced by a process developed in 1942 called Fluid Catalytic Cracking (FCC). This process revolutionized the petroleum industry by more efficiently transforming higher boiling oils into lighter, usable products. FCC produces gasoline as well as heating oil, fuel oil, propane, butane, and chemical feedstocks that are instrumental in producing other products such as plastics, synthetic rubbers and fabrics, and cosmetics. It is considered one of the most important chemical engineering achievements of the 20th century. In the future, catalysts will be used to produce clean energy from renewable energy sources, such as hydrogen for fuel cells and transportation fuels from non-edible biomass.

Emissions: Automobile emission catalysts have been developed since the 1960s to destroy CO, NOx and hydrocarbon emissions from mobile vehicles. Catalysts are also used to destroy the origins of sulfur based emissions in the combustion of fuels. In addition catalysts are widely used to destroy the objectionable emissions from the world's coal fired power plants.

Polymers: Catalysts are also used in the production of the world's polymers. Current examples of polymers include adhesives, coatings, foams, and packaging materials, textile and industrial fibers, composites, electronic devices, biomedical devices, optical devices, and precursors for many newly developed high-tech ceramics.

Life: Enzymes are one example of catalysts within our bodies which are critical to maintaining life. Further, the possibility of analyzing and ultimately manipulating genes rests on the catalytic properties of RNA to replicate mol-

ecules containing biological information.

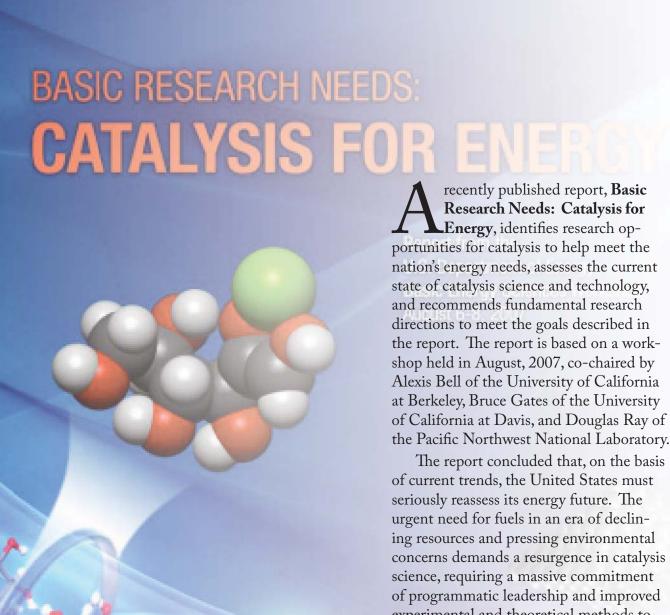
Health: The pharmaceutical industry employees large amounts of catalysts needed to produce the specificity of products they require. Catalysts used in the production of drugs are used to save lives and improve the health and lifestyle of people around the world.

Food: Catalysts are widely used in food processing and enhance the performance of other consumer products such as laundry detergents.

The economic contribution from catalysis is as remarkable as the phenomenon itself. Four sectors of the world's economy are petroleum, energy production, chemicals production, and the food industry; together they account for more than 10 trillion dollars of the world's GNP, and all of these are critically dependent on the use of catalysts. Estimates are that catalysis contributes to greater than 35% of global GDP; the biggest part of this contribution comes from the generation of high energy fuels (i.e., gasoline, diesel, hydrogen) which depend critically on the use of small amounts of catalysts in our world's petroleum refineries. As a business, the catalyst market itself is growing from the current US\$12 billion, so that catalysis costs are much less than 0.1% of the sales revenue from the products which they create.

The North American Catalysis Society is a not-for-profit professional organization of over 1,500 scientists and engineers who work in the field of catalysis. The web site for the Society, www.nacatsoc.org provides information to members and to the public about professional activities as well as folders containing information on catalysis science. Those seeking additional information and other detailed examples on what catalysis is, does, or the value it provides are encourage to look further at the educational sub-folders on this web site. Another resource is the excellent textbook: Fundamentals of Industrial Catalytic Processes, by C. H. Bartholomew and Robert J. Farrauto, published by John Wiley & Sons; 2nd edition (2005), ISBN-13: 978-0471457138.

John Armor GlobalCatalysis.com, February 2008



of current trends, the United States must seriously reassess its energy future. The urgent need for fuels in an era of declining resources and pressing environmental concerns demands a resurgence in catalysis science, requiring a massive commitment of programmatic leadership and improved experimental and theoretical methods to make it possible to follow, in real time, catalytic reactions on an atomic scale on surfaces that are nonuniform and laden with large molecules undergoing complex competing processes. Ultimately, a goal should be development of sustainable technologies for converting carbon dioxide and water into fuel feedstocks. Until that future state is reached, new understanding of more traditional catalyst form and function can ease the way to a more sustainable energy future.

Details are available in the full 222-page report, which is accessible on line at http://www.sc.doe.gov/bes/reports/files/CAT_rpt.pdf.



April 30, 2008 is the new deadline for early registration at the 14th International Congress on Catalysis.

Save \$\$\$ with early registration.

14th ICC — Pre & Pos Symposia

The ICC meeting in Seoul in July 2008 will also have a host (www.icc2008ko-rea.com/symposia.asp) of pre and post conferences in Asia. The web site for the week-long international meeting (www.icc2008korea.com) provides information about registration, accommodations, and programming for the Seoul meeting.

Pre - Symposia

Creation and Control of Advanced Selective Catalysis

Kyoto, Japan, July 9-11, 2008 http://www.shokubai.org/index_e.html Organizer: Prof. Y. Iwasawa

Nanocatalysis: Fundamentals and Applications

Dalian, China, July 9-11, 2008 http://www.nano.dicp.ac.cn/ Organizer: Prof. C. Li: canli@dicp.ac.cn

Hydrocarbon Selective Oxidation and Syngas Conversion Catalysis

Xiamen, China, July 9-11, 2008 http://pcss.xmu.edu.cn/14icc-pre/ Organizer: Prof. Y. Wang: yewang@xmu.edu.cn

Post - Symposia

Catalysis for Hydrogen Energy Production and Utilization

Gyeongju, Korea, July 20-22, 2008 http://post-icc08.postech.ac.kr/english/portal.php Organizer: Prof. J.S. Lee: jlee@postech.ac.kr

First International Combinatorial Catalysis Symposium

Daejeon, Korea, July 20-22, 2008 http://www.iccs2008.org/

Organizer: Prof. S.I. Woo: siwoo@kaist.ac.kr

International Symposium on Catalysis for Ultra Clean Fuels

Dalian, China, July 21-24, 2008 http://www.cleanfuel.dicp.ac.cn/ Organizer: Prof. C. Song: csong@psu.edu Calendar

May 8 - Michigan Annual Spring Symposium May 15 - Chicago Spring Symposium May 22 - Philadelphia Spring Symposium Jun. 15-18 - 20th Canadian Symposium on Catalysis June 22-27 - Gordon Research Conference on Catalysis August 1 - 21st North American Meeting: Call for abstracts and applications for Kokes Student Travel Awards

Clubs & Societies News

Chicago Catalysis Club

Herman Pines Award in Catalysis presented to Dr. Aleksey Yezerets

The Catalysis Club of Chicago is pleased to announce that the 2008 Herman Pines Award in Catalysis is presented to Dr. Aleksey Yezerets from Cummins Inc. The Herman Pines Award is presented annually by the Catalysis Club of Chicago for outstanding research in the field of catalysis. Herman Pines was an outstanding research scientist, and his work revolutionized the general understanding of organic chemistry, particularly the chemistry of hydrocarbons interacting with strong acids. The award in his honor is sponsored by UOP where Herman began his industrial career in 1930 and amassed 145 US patents over a 23-year period. The award is being co-sponsored by the Catalysis Club of Chicago of which Professor Pines was a founding member.

Dr. Yezerets is being honored for his significant accomplishments in the area of automotive exhaust catalysis. Dr. Yezerets has been a leading contributor to the development of a new Lean NOx Trap catalyst system for diesel powered vehicles. The new system meets the stringent 2010 EPA NOx requirements and is already in place in over 150,000 vehicles. Dr. Yezerets has also contributed heavily to the areas of soot oxidation kinetics and advanced gas analysis. Formal presentation of the award took place at the 2008 Spring Symposium of the Catalysis Club of Chicago on Thursday, May 15, 2008, where Dr.

Yezerets will give a seminar on his research titled "Catalysis for Clean Diesel Power."

In addition to the presentation of the Pines award to Dr. Yezerets our Spring Symposium will feature a keynote talk from Bruce Gates of the University of California at Davis titled "Molecular Catalysis on Surfaces: Conversions with Metal Complexes and Clusters."

Notes from the Michigan Catalysis Society, Spring 2008

fter a strong series of invited lectures was completed in the fall of 2007, The Michigan Ca-Lalysis Society continued its 2007-08 season with three additional dinner meetings in early 2008. After a break for the holidays, the season resumed on February 5th with a presentation from Dr. John Vohs of the University of Pennsylvania. Prof. Vohs presented some of his current work on the mechanism of hydrogen formation from methanol over Pd-Zn alloy catalysts. The MCS was visited on March 4th by Dr. Bob Davis of the University of Virginia. Prof. Davis presented his work on the mechanism of selective oxidation reactions over Au catalysts. His talk sparked a lively debate among the attendees over the nature of the active site in this important class of catalysts. The MCS closed its 2007-08 dinner meeting season on April 1st with a presentation from Dr. Matt Neurock, also of the University of Virginia. Although the choice of the date was rather "foolish," Prof. Neurock

Clubs & Societies News

gave a very thought provoking presentation on his research which combines quantum mechanics and kinetic Monte Carlo simulations in order to better understand chemical reactions on catalysts and electocatalysts.

The final event of the 2007-08 season will take place on May 8th at the 30th Annual Spring Symposium of the Michigan Catalysis Society. This year's Symposium will be held at the General Motors Technical Center and will feature the presentation of the Michigan Catalysis Society's 2008 Giuseppe Parravano Memorial Award for Excellence in Catalysis Research and Development to Dr. George Graham for his research on catalysts for automotive emissions control. Dr. Graham is currently at the University of Michigan after his recent retirement from the Ford Motor Company. The symposium will also feature a keynote lecture by Dr. Fred Wagner of the GM R&D -- Fuel Cell on progress in the development of fuel cell powered vehicles. There will also be contributed papers, many given by graduate students competing for the Outstanding Student Presentation Award that will be presented at the evening banquet of the symposium.

Catalysis Club of Philadelphia

Winners of the Student Poster Competition

he Catalysis Club of Philadelphia's Annual Student Poster Contest was held on March 13, 2008 with 24 student entries, plus one post-doctoral presenter. Top honors went to Mosha He Zhou from the University of Pennsylvania, with her poster "Direct In Situ Determination of the Polarization Dependence of Adsorption on Ferroelectric Surfaces". Four runners-up include Bill Pyrz (University of Delaware) with "Direct Observation of the MoVNbTeO M1 Phase Using aberration-corrected High-Resolution STEM"; Gong Zhou (University of Pennsylvania) with "Characterization of the Equilibrium Redox Properties for Ceria-based Mixed Oxides"; Carl Menning (University of Delaware) with "General Trends in the Stability of Monolayer Bimetallic Surfaces"; and Paul Dimick (Lehigh University) with "Examining the Surface of a Synergistic Pt-Rh/γ-Al₂O₃ Catalyst with

In-situ FTIR Spectroscopy Using NO as a Probe Molecule". Mosha Zhou will be presenting a talk on her work at the Catalysis Club's Annual Spring Symposium, May 22, 2008.

2008 Spring Symposium

he Catalysis Club of Philadelphia Spring Symposium will be held on May 22, 2008, at Clayton Hall, University of Delaware. The theme of the symposium will be Environmental Catalysis. The program and registration form is available in our web site: catalysis-clubphilly.org/symp08.php. Deadline for early registration is May 8, 2008. The invited speakers are:

- Dr. Bob Farrauto, BASF/Columbia University
- ▶ Prof. Ray Gorte, University of Pennsylvania
- ▶ Prof. Harold Kung, Northwestern University
- ▶ Dr. Chuck Peden, PNNL
- ▶ Prof. Fabio Ribeiro, Purdue University
- ▶ Prof. Chunshan Song, Pennsylvania State University
- ▶ Prof. Dion Vlachos, University of Delaware
- ▶ Dr. Andy Walker, Johnson Matthey

New Officers

lections for the 2008-2009 officers were held on Thursday, April 24, 2008. The elected officers are: Michael Smith, Chair-Elect (Villanova University); Steve Harries, Treasurer (LyondellBasell Industries); Joe Fedeyko, Director (Johnson Matthey); Haiming Liu, Director (Arkema Inc.); and Elizabeth Ross-Medgaarden, Director (LyondellBasell Industries). Congratulations!

Catalysis Society of Metropolitan NY

Professor Jingguang G. Chen is the winner of the 2008 Award for Excellence in Catalysis

ingguang G. Chen, LeClaire Professor of Chemical Engineering and the director of University of Delaware's Center for Catalytic Science and Technology, has won the 2008 Award for Excellence in Catalysis

Clubs & Societies News

presented by the Catalysis Society of Metropolitan New York.

Chen is being recognized for his strong contributions to the field of catalysis. In particular, his work to understand the physical and chemical properties of bimetallic and metal carbide surfaces has inspired new application to catalytic and fuel cell processes. Chen is also well known for his expertise in applying advanced techniques such as NEXAFS to identify and characterize reactive species in real world catalysts.

Chen is the cofounder and the principal investigator of the Synchrotron Catalysis Consortium (SCC) at the National Synchrotron Light Source, Brookhaven National Laboratory. He is a member of the board of directors of the North American Catalysis Society and also serves as the catalysis secretary-general of the American Chemical Society.

The Excellence in Catalysis Award lecture will take place in May 21st where Chen will also receive a plaque and cash award. For more details, visit www.nycsweb.org.

2008 Spring Symposium

he 2008 Spring Symposium organized by The Catalysis Society of Metropolitan New York on March 25 th was a big success. The symposium was held at Seton Hall and had drawn around 80 attendees. Nine outstanding oral presentations were shared by graduate students and speakers from academia and industry. Distinguished speakers included Robert J.Davis (keynote,University of Virginia). Steven L. Suib (invited, University of Connecticut), and Chunshan Song (invited, Penn. state).

The oral presentations were complimented by an equally outstanding poster session with 19 poster presenters. Congratulations to Wenhua Chen (Rutgers University), Paul Dimick (Lehigh University), Carl Menning (University of Delaware), Lucas Dorazio (Columbia University) and Dan Esposito (University of Delaware) who won this year's awards for best poster presentations.

The New York section extends its thanks to attendees, participants, organizers, and corporate sponsors (Exxon-Mobil, BASF, Hyperion Catalysis and Lummus Technology) and the North American Catalysis Society for collectively making the event a success.

Southeastern Catalysis Society

Meetings

he 82nd ACS Colloid and Surface Science
Symposium will be hosted by North Carolina
State University on June 15-18, 2008. Among
other offerings there will be three sessions on Surface
Science and Catalysis (17 papers, 1 day) organized by
Henry Lamb (NCSU) and Jason Weaver (UF). Prof.
Charles Buddie Mullins (University of Texas) will give an
invited talk "Water-Enhanced CO Oxidation on Gold".
Contributed papers were received from throughout the
region of the Southeastern Catalysis Society, including
contributions from University of South Carolina, Virginia
Tech, University of Florida, Oak Ridge National Laboratory and NCSU. More information can be found at www.
colloids2008.org.

The Fuel Division of the American Chemical Society (2009 Program Chair: Andrew M. Herring) announces a Symposium in Catalysis in Fuel Chemistry to be held during the Spring 2009 ACS National Meeting & Exposition. The Symposium will feature research on all fundamental and applied aspects of catalysis related to fuel production and utilization. Topics include, but are not limited to:

- ▶ Biomass Conversion
- ▶ Catalysis for Alternative Fuel production
- ► Emission Control Catalysis
- ► Catalytic Upgrading of Fuels
- ▶ Selective Catalytic Oxidation and Reduction
- ► Carbon Based Catalysis
- ► Catalyst Characterization
- ➤ Computational Analysis

The symposium will be organized by Steve Overbury and Chaitanya Narula of Oak Ridge National Laboratory. Online submission of abstracts will be through the ACS Oasys Website. Start planning now for this exciting opportunity. For more information contact Steve Overbury overburysh@ornl.gov, Tel: (865) 574-5040.

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Clubs & Societies News

Southwest Catalysis Society

Spring Symposium Report

WCS Spring Symposium was held at Rice University on April 4. Chair-Elect Professor Mike Wong chaired the symposium.

A total of 70 participants from both industry and academics attended the one-day Symposium. The Symposium was backed with strong industrial sponsorship from Chevron Phillips Chemical, CrystaPhase, ExxonMobil, Hiden Analytical, Intertek, Micromeritics, SABIC, and SASOL North America. CrystaPhase, Hiden, Intertek and Micromeritics had exhibit booth during the Symposium.

Seven podium presentations were made, including Ciapetta Lecturer given Bob Farrauto of BASF, other speakers include: Zack Ball of Rice U, Louis Burns of Albemarle, Gary Gildert of Custom Catalytic Solution, Mike Harold of U of Houston, Karen Martirosyan of U of Houston, Dan Shantz of Texas A&M, Gary Gildert of Custom Catalytic Solution, Louis Burns of Albemarle. Seventeen posters were presented from Lamar U (1), LSU (2), Rice University (2), Texas A&M (3), and University of Houston (9).

Recipients of Best Poster Awards for this year are: Yun Cai of Texas A&M (Goodman Group), Freddy Avila Diaz of LSU (Dooley Group), Kimberly Heck of Rice University (Wong Group), and Sameer Israni of University of Houston (Harold Group).

Recognition awards were presented to: Kerry Dooley, Joe Hightower, Jack Lunsford, Wayne Goodman, Michel Daage, Mike Leminski, John Novak, Steve Xiao, Cathy Tway, Dawn Mason for outstanding contribution to the 20th NAM and their service to the SWCS.

ExxonMobil, ChevronPhillips Chemicala and CrystaPhase were presented with recognition awards for their generous and continuing leadership corporate sponsorship to the SWCS.

Western States Club

Dear WSCC colleagues,

I am writing all of you today in my new role as WSCC president, to wrap up the very successful meeting in Albuquerque. First, a big round of thanks needs to go to the organizers, Abhaye Datye, Jim Miller and Estelle Zamora for putting together such a great event. Of course, all of the participants, judges and the Keynote Speaker (Jim Dumesic) really made the event a success with their presentations of top catalysis research. Additionally, a great deal of thanks goes to the national organization that allocated \$1000 to us for the meeting, allowing us to help with the registrations for 16 students.

For those who weren't able to attend, the lunch included a brief tribute to Shane L. Anderson by his mother and sister on the occasion of the 10th anniversary of his early passing (the outstanding student presentation award is named for Shane and Jay C. Dorius). Following this, the business meeting included selecting myself as the successor to Will Medlin as president while Jim Miller (representative to the national organization) and Morris Argyle (treasurer) will remain in their positions. A great deal of thanks should also be directed to Will, Jim and Morris for their service to the club. Finally, it was also decided during the business meeting that the 2009 meeting would be in Colorado (likely the Denver area).

A panel of judges also assessed all of the presentations for student awards. Because of the numerous very strong presentations this was a particularly challenging job. After a very long discussion and analysis of each presentation the judges decided upon the following winners.

> 3rd place: Steve Marshall, CU
> 2nd place: Rachel Dorin, UNM
> 1st place: Travis Conant, UNM

Congratulations to all and see you next year in Colorado!!

Best regards,

Ryan Richards
President WSCC

10

2007-2008 Officers Directory

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