

華美化學與化工學會

Chinese-American Chemical Society (CACS)

Special Issue for Silver Anniversary

August 2006

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CACS OBJECTIVES

The purpose of the CACS is to encourage the advancement of chemistry and engineering in all their branches, to promote research in the chemical sciences and technology, to improve the qualifications and occupational opportunities of its members, to facilitate professional contacts, and to promote interactions with other scientific communities. The CACS is a non-profit organization and does not have political affiliation or regional bias.

CACS NATIONAL NEWSLETTER

The Newsletter is for our members to share our thoughts, information and experiences. All the members are invited to contribute. In general, we solicit articles that are

- informative reports beneficial to most members
- easy-to-read, yet insightful, introduction to specialized areas
- views demonstrating innovation and originality
- provocative views to make people think.

We would like also to report on the accomplishments of our fellow professionals. In addition, we need and welcome write-ups on career pointers and reminiscences, articles to introduce a person or a company, reports on jobs, meetings and activities. There is no fixed format. The Newsletter can be as rich and unique as how all our members make it.

Announcements about job openings and positions desired, in C&E News format, should be sent to the address below.

The articles published here reflect the perceptions of the speakers, reporters, or writers. Errors do occur. For comments and corrections, please write to the address below.

Submission of Articles:

Submit manuscripts to: Dr. Lin Li, Chevron Energy Tecnology Company, 100 Chevron Way, Richmond, CA 94802, or electronically to Lin.Li@chevron.com.

Acceptance of Articles:

The newsletter committee reserves the right to accept, reject, and edit manuscripts.

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Website for CACS
www.cacshq.org

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www.glcacs.org

Message From the Chairman

W.S. Winston Ho

Greetings! I would like to take this opportunity to thank our CACS Second Vice-President, Dr. Yunsheng (Tony) Hsieh, Professor Jeff Hsieh (Georgia Institute of Technology), our CACS President, Dr. Yi Hua Ed Ma, and our Treasurer and board member, Dr. Chu-An Chang for taking care of the major events successfully this Spring for our CACS 25th Anniversary Symposium and Banquet. The Symposium organized by Tony and me and cosponsored by the ACS Division of the History of Chemistry took place in conjunction with the ACS 231st National Meeting in Atlanta, GA, Monday, March 27, 2006. This symposium celebrated the silver anniversary of the CACS at its founding site at the ACS meeting, and the theme was on sustainable contributions by chemical professionals. The format of the symposium consisted of VIP presentations by Dr. Ed Ma, CACS President, Dr. Ann Nalley, ACS President, Dr. John Chen, AIChE (American Institute of Chemical Engineers) President, and Dr. Arnold Thackray, President of Chemical Heritage Foundation. After the VIP presentations, there were three invited Keynote Lectures by Dr. Norman N. Li, President, NL Chemical Technology, Inc., who is also our board member, on “Water Treatment and Reuse by Membrane Technology”, Dr. Hai-Lung Dai, Professor, University of Pennsylvania, on “Science Education, Research, and Society – The Perspectives of an Immigrant Research Scientist and Teacher”, and Dr. L. S. Fan, Professor, The Ohio State University, with his lecture “On the Clean Fossil Energy Conversion Systems”. All of the Keynote presenters are internationally well-known scientists. All of the VIP and Keynote presentations were fantastic and well received. Following this Symposium, we had a banquet and the Keynote Address by Mr. Chris Hobson, Senior Vice President, Research and Environmental Affairs, Southern Company, at this company in the evening. Attended by about 100 people including all of our invited speakers and our CACS members and guests, the Keynote Address was on Environmental Controls and Advanced Power Generation. On behalf of our Society, I would like to thank all of the VIP and Keynote speakers and Asia Pacific American Association for making the Symposium and Banquet successful and memorable.

Congratulations to the 10th Anniversary of Great Lakes Chapter of CACS (GLCACS)! A special celebration for this Anniversary at the Great Lakes CACS Conference, Evanston, IL, May 13, 2006 was well organized and conducted by Dr. Bing Sun, GLCACS President, Dr. Ling Ye, our CACS First Vice-President, and other GLCACS leaders. Tri-State CACS’ Annual Symposium and the Beijing International Pharmaceutical and Chemical Intellectual Property Forum co-organized by CACS were very successful. Thanks to Guang Cao and others’ efforts.

Ed, Ling, and Chu-An have also made special arrangements for two upcoming major CACS events this year: (1) ACS National Meeting in San Francisco, CA in September and (2) AIChE Annual Meeting also in San Francisco, CA in November. At the ACS meeting, we will have our CACS social hour and banquet, where our invited Keynote Speaker, Dr. Simon Tung, Technical Fellow, GM R&D Center, will present an after-dinner speech on “Development of Next Generation Coolants Using Nanofluids for Advanced Vehicles”. At the AIChE meeting, we will have our CACS banquet, and our invited Keynote Speaker is Dr. Teh C. Ho, Corporate Research, ExxonMobil Research and Engineering Company, who was our 2004 CACS

President. Teh will give a speech on “Modeling of Hydrocarbon Processing”. For these two events, please see the detail information in the forthcoming CACS activities in this issue of the Newsletter. If you are going to attend one or both of these national meetings, please attend the CACS activities to renew our fellowship and to make friends with our fellow scientists.

As you may know, it is indeed quite a large amount of work to organize events for all the national meetings each year, particularly in view of the fact that everyone serves at CACS is on a voluntary basis. As usual, CACS local chapters have complete freedom to organize any meetings they want.

This issue of the CACS Newsletter was under the leadership of Dr. Lin Li of Chevron Energy Technology Company, who is our present CACS Newsletter Team Leader. He and his team members, including Dr. Bing Sun of UOP, Dr. Patricia Sun of General Electric, Dr. Yuchun Wang of Cabot Corporation, and Dr. Mindi Xu of Air Liquide, have continued to work hard for our Newsletter. Many thanks for their and other team members’ efforts for this issue. If you have any Newsletter items, please send them to Lin or any of the team members.

We really appreciate all the support that you have given to our Society and will continue to do so. Thank you very much for all of your support. Have an enjoyable, great summer!

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events and is the factory charge in all high-end automobiles. Prof. Jing Li of Rutgers University talked on her cutting edge discoveries of a class of millimeter-size semiconducting materials that exhibit properties of nanometer-size semiconductors. Her work has the potential of leading to applications in harvesting solar energy.

A panel of distinguished speakers included Dr. Birendra N. Pramanik, Distinguished Fellow at Schering-Plough Research Institute, who gave a presentation on the latest advances in mass spectrometry for drug discovery and development. Dr. Peijun Cong, Vice President of Technology Development at Accelergy Corporation, gave an introduction to his young but fast growing (3 year existence, 150 employees) high throughput chemical R&D company in China. Marketing Manager Ms. Ping Cao and Chief Operating Officer Dr. James A. Schwindeman of Tyger Scientific illustrated their philosophy in customer service and technical capabilities at Tyger, a custom chemical company. Dr. Lixin (Leo) Shen, Vice President of AstaTech told the audience about AstaTech’s capability in providing small to large quantities of custom chemicals from its facilities in US, Canada, and China. Both Tyger and AstaTech have seen more than 20% growth rate in the past several years.

This is the fifth year that the Tri-State CACS has held its annual symposium. The symposium has served to bring together Chinese-American chemists and to help raise the profile of and support for the CACS. The following sponsors have provided financial support for this year’s symposium: ExxonMobil Research and Engineering Co., Merck Research Laboratories, Schering-Plough Research Institute, ExxonMobil Volunteer Involvement Fund, Tyger Scientific, Inc., AstaTech, and the IP law firm Finnegan, Henderson, Farabow, Garrett, and Dunner, LLP. (by Guang Cao)

Society News / Past Activities

CACS 25th Anniversary Symposium/Celebration and Banquet

Our CACS Second Vice-President, Dr. Yunsheng (Tony) Hsieh, and Chairman, Professor Winston Ho as well as Professor Jeff Hsieh (Georgia Institute of Technology), our CACS President, Dr. Yi Hua Ed Ma, and our Treasurer and board member, Dr. Chu-An Chang took care of the major events successfully this Spring for our CACS 25th Anniversary Symposium/Celebration and Banquet. The Symposium/Celebration organized by Tony and Winston and cosponsored by the ACS Division of the History of Chemistry took place in conjunction with the ACS 231st National Meeting in Atlanta, Georgia, Monday, March 27, 2006. As you may recall, our CACS was founded at the ACS National Meeting in Atlanta, Georgia in 1981 by the late CACS Board Member, Dr. Jesse Hwa, and other CACS leaders. Thus, it was particularly meaningful for this Symposium to celebrate the silver anniversary of the CACS at its founding site at the ACS meeting. A note from Mrs. Hwa before this Symposium said that “Jesse will be smiling on March 27”. With the theme on sustainable contributions by chemical professionals, this Symposium had the format consisting of invited VIP presentations and Keynote lectures.

The VIP presentations were by Dr. Ed Ma, CACS President, Dr. Ann Nalley, ACS President, Dr. John Chen, AIChE (American Institute of Chemical Engineers) President, and Dr. Arnold Thackray, President of Chemical Heritage Foundation. Frances B. Manning Professor of Chemical Engineering and Director, Center for Inorganic Membrane Studies, in the Department of Chemical Engineering at Worcester Polytechnic Institute in Worcester, MA, Dr. Ma, our CACS President, challenged our members on continued contributions on the service to and the growth of our Society after his congratulatory remarks on the special occasion of the CACS 25th Anniversary. He hopes that CACS will get younger chemists and chemical engineers involved and that CACS will encourage Chinese chemists and chemical engineers to become more active in their communities and to voice their opinions. ACS President, Dr. Nalley, Professor of Chemistry in the Department of Physical Sciences at Cameron University in Lawton, OK, appreciated the role played by CACS in the ACS. She reminded the audience of the importance of peer recognition and encouraged everyone to nominate their colleagues, to identify their accomplishments, and to recognize them. AIChE President, Dr. Chen, who is Carl R. Anderson Professor in the Department of Chemical Engineering at Lehigh University in Bethlehem, PA, emphasized the important role Chinese Americans play and their contributions in the chemical industry. Dr. Thackray, President of Chemical Heritage Foundation, founded by the joint action of ACS and AIChE in 1987 and located in Philadelphia, PA, talked about the Chinese history and tradition in chemistry.



Ma presenting his VIP remarks –
Photo by Linda Wang, C&E News



Nalley giving her VIP remarks – Picture by
Linda Wang, C&E News



Right: Professor Bert Ramsay of
Michigan State University translating
Nalley's remarks into Chinese – Photo
by Linda Wang, C&E News



Chen delivering his VIP remarks – Photo
by Linda Wang, C&E News



Thackray making his VIP remarks – Photo
by Linda Wang, C&E News

After the VIP presentations, there were three invited Keynote Lectures by Dr. Norman N. Li, President, NL Chemical Technology, Inc., Dr. Hai-Lung Dai, Professor, University of Pennsylvania, and Dr. L. S. Fan, Professor, The Ohio State University. Having had 43 years of distinguished career in chemical and petroleum industries, including at Exxon, UOP, AlliedSignal, Honeywell, and now NL Chemical Technology and a rare distinguished honor of



Li presenting his Keynote Lecture –
Photo by Linda Wang, C&E News

being a member of 3 academies, National Academy of Engineering, USA, Chinese Academy of Sciences in China, and Academia Sinica in Taiwan, Dr. Li, who is our board member, gave a lecture on “Water Treatment and Reuse by Membrane Technology”. The lack of clean water is a serious problem in many parts of the world, and membrane technology is effective in removing impurities and pollutants from water. As pointed out by Dr. Li, there are basically two broad types of membranes for water treatment and reuse; one is solid polymeric membranes and the other facilitated transport membranes. Within each broad type, there are several specific types of membranes. His talk discussed the various specific types of membranes and their roles in water treatment and reuse processes. His discussion included not only the present membranes and membrane processes, but also the future developments of new membranes and processes, including those with superior fouling resistance. Also described was the use of Six Sigma management and quality program in membrane R&D and manufacturing.

The Hirschmann-Makineni Professor of Chemistry in the Department of Chemistry at the University of Pennsylvania, Dr. Dai talked about “Science Education, Research, and Society – The Perspectives of an Immigrant Research Scientist and Teacher”. He discussed novel spectroscopic techniques using light for characterizing the structure and properties of transient and unstable molecules on surfaces. He cited a recent National Academies Committee on Prospering in Global Economy of the 21st Century report to Congress, Rising above the Storm: Energizing and Employing America for a Brighter



Dai delivering his Keynote Lecture
– Photo by Linda Wang, C&E News

Economic Future, pointing out several areas critical to the economic competitiveness of the U.S. which have been identified for improvement: talent pool and education in science, basic research support, commercializing and investing in innovation, and intellectual right protection. He provided personal perspectives on the strength and current problems encountered in science education, from K-12 to college, and research here in the U.S. He also discussed how an immigrant scientist could contribute to the betterment of science education and research in the U.S.

The Distinguished University Professor and C. John Easton Professor of Engineering in the Department of Chemical & Biomolecular Engineering at the Ohio State University and a member of the National Academy of Engineering, USA, Dr. Fan presented his lecture “On the Clean Fossil Energy Conversion Systems”. He described the overall energy outlook in the context of the chemistry, mechanisms, process engineering, economics, and regulations that surround the development of the new clean coal technologies. His presentation covered the salient features of the fundamental and process aspects of the technologies conceived and developed in his laboratory, including commercially demonstrated SO_x and NO_x reduction processes, CO_2 sorbent separation and mineral sequestration processes, and high temperature H_2S sorbents. Three new combustion and gasification processes based on the chemical looping concepts developed in his laboratory were discussed. He highlighted the syngas chemical looping process which his group was developing for the Department of Defense in the production of jet fuels from coal. The state-of-the-art research in fluidization including the discrete computation of gas-liquid-solid fluidized beds and the 3-D imaging of the dynamics of the choking transition in gas-solid fluidized beds was also presented.



Fan giving his Keynote Lecture –
Photo by Linda Wang, C&E News

All of the Keynote presenters are internationally well-known scientists. All of the VIP and Keynote presentations were fantastic and well received. Following this Symposium, we had a banquet/dinner and the Keynote Address by Mr. Chris Hobson, Senior Vice President, Research and Environmental Affairs, Southern Company, at this company in the evening. Attended by about 100 people including all of our invited speakers and our CACS members and guests, the Keynote Address was on “Environmental Controls and Advanced Power Generation”. Mr. Hobson discussed the system-wide environmental issues and environmental compliance planning as well as research and development of new technology to address future challenges for advanced power generation, particularly from coal. We would like to thank all of the VIP and Keynote speakers and Asia Pacific American Association for making the Symposium and Banquet successful and memorable.



CACS 25th Anniversary Symposium group photo taken by Linda Wang, C&E News (From left, Tony Hsieh, Winston Ho, Arnold Thackray, John Chen, Ann Nalley, Ed Ma, Norman Li, L. S. Fan, and Hai-Lung Dai)



Ho presenting an appreciation plaque to Hobson at CACS banquet – Picture by Dr. Jane Li

At the end of the 25th-anniversary celebration, some attendees including graduate students stayed around to mingle, exchange contact information, and walk over to the ACS' Sci-Mix poster session together. They laughed, joked, and talked chemistry and chemical engineering. It certainly was a great occasion for making new friends and lasting impressions.



Buffet-style banquet/dinner – Photo by Linda Wang in May 1, 2006 C&E News



Another picture for the buffet-style banquet/dinner taken by Linda Wang, C&E News

GLCACS 10th Anniversary Celebration

The Great Lake Chinese-American Chemical Society held its 10th annual conference at Northwestern University on Saturday, May 13, 2006. The theme of this year's conference is **"Perspectives on Chemistry and Chemical Engineering – Celebrating GLCACS's 10th Anniversary"**. Prof. Winston Ho, Board Chair of CACS, and Prof. Yi-Hua (Ed) Ma, CACS President, Prof. Charles P. Casey, Past President of ACS, and Dr. Norman Li, Board Member of CACS and Board Chair of GLCACS, joined more than 100 GLCACS members to celebrate GLCACS's 10th anniversary. In their congratulation remarks, they highly appraised the achievements of GLCACS in the past 10 years in promoting fellowship and networking and enhancing professional development for GLCACS members. All the participants shared the "birthday" cake joyfully.



Cutting "Birthday Cake". From left: Dr. Bing Sun (GLCACS President), Dr. Norman Li (GLCACS Board Chair), and Dr. Ling Ye (Conference Chair).



Special guests, speakers and conference organizers

Focusing on conference theme, distinguished scholars and professionals from both academia and industry gave insightful presentations addressing significant advances and critical issues from the perspectives on chemistry and chemical engineering. Prof. Charles Casey, Homer B. Adkins Professor of Chemistry at the University of Wisconsin-Madison, gave a very inspiring lecture, "Challenges for Chemists". He focused attention on the challenges that chemists and chemical engineers face. He urged all chemical scientists to make a list of major societal problems that will require advances in basic chemical sciences in order to enable new opportunities, since this is the kind of information that chemical scientists need when presenting the case for support of chemical sciences to the public, to legislative bodies, and to leaders of government science agencies. He also discussed what chemical scientists can do to assure that President Bush's Innovation Initiative is enacted by the Congress.



Prof. Charles Casey, ACS Past President, University of Wisconsin-Madison

In his presentation entitled "Pharmaceutical Industry Overview – A Scientist's Perspective", Dr. Shing Chang, Divisional VP of Infectious Disease Research at Abbott, provided an overview of the R&D process leading to drug approval, the uncertainties associated with drug development, the high risk nature of research, and the tremendous socioeconomic and health benefits the industry has delivered through innovation. The complex interplay of these factors will continue to force changes on the pharmaceutical industry. He indicated that to succeed in the future, pharmaceutical companies must deliver innovative drugs that offer discernable benefits to patients to meet the public demands for greater access of quality drugs at reasonable cost, but the question of "Who should pay for the innovative drugs in the future?" will remain a hot topic for debate.

William M. Miller of Northwestern University discussed the growing importance of biology in Chemical Engineering based on his more than 30 years' industrial and academic experiences. Chemical engineers have defined the terms "biochemical engineering" and "biotechnology and bioengineering", and they have been involved in the development of processes for the production of chemicals, biologicals and pharmaceuticals from living organisms since the beginning of the 20th century. In recent years biology has rapidly grown in importance to our field, such that biology has now joined chemistry and physics as a core enabling science for chemical engineering research and practice. Furthermore, enzymatic and microbial processes are being developed for the production of commodity and specialty chemicals, and are being employed by traditional chemical companies such as DuPont. Such processes will play an important role in the quest for sustainable development, which present

both challenges and opportunities for chemical engineers. Chemical engineers have contributed greatly to industrial biological processes for antibiotics, vaccines, and protein- and cell-based pharmaceuticals, and will continue to make contributions which range from applications of molecular and cell biology to bioinformatics and systems biology, and span length scales from the design of biomimetic molecules through the synthesis of scaffolds for tissue engineering to the analysis of entire ecosystems.

Mr. Steve Fussell, Senior Vice President of Abbott Laboratories, addressed “new” rules for managing career in a global marketplace. As businesses increasingly globalize their markets, systems and corresponding work processes, global talent management will be the key differentiation of successful firms. Given sweeping changes in demographics, employment markets, regulatory demands and the migration of work, the critical success factors for managing career are changing. Mr. Fussell first discussed the drivers of change and their implications, then offered some practical guidance regarding career management. He pointed out that the critical success factors are Head, Heart and Guts, and excellent communication skills are of essential importance. Through his superb presentation skill and brilliant exposition, Mr. Fussell also demonstrated the personal charm of a senior executive.



Mr. Steve Fussell, Senior VP of Abbott

In order to help young members such as graduate students and postdocs to make first step for their career, Prof. Ed Ma gave a presentation about how to enhance the chance to find a desired job. Prof. Winston Ho and Prof. Harold H. Kung (GLCACS Board Member, professor at Northwestern University) later joined Prof. Ma to answer many questions from the audiences, which covered various aspects of job hunting, such as resume writing, interview skills, “elevator dialog”, etc.

Building on last year’s success, GLCACS again sponsored a Student Poster Session with cash prizes for the best posters. About 20 graduate students and postdocs from universities in great lake area presented their research results. Lian Wang from Northwestern University, Peng Chen from University of Chicago, and Chi-Ming Yu from Purdue University won 1st, 2nd, and 3rd prizes, respectively.

Companies in Chicago area including UOP, Hospora and Abbott provided support to this year’s conference, and HR representatives from these companies attended the conference to provide hiring information. In addition, Spherotech and Cabot Microelectronics also provided financial support to the conference.

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Tri-State CACS' Successful Annual Symposium

On a beautiful sunny Saturday, June 10, 2006, about 150 members and friends of the Tri-State Chinese-American Chemical Society (Tri-State CACS) spent part of their precious weekend to participate in the Tri-State CACS annual symposium at the Rutgers Busch Campus Center in Piscataway, New Jersey. The theme of this symposium was "Cooperation and Collaboration in the Age of Competition," which attempted to capture the prevailing trend of increasing economic ties across the pacific in chemistry-related endeavors.

In his opening remarks Dr. Guang Cao, the president of Tri-State CACS and chairman of the program organizing committee, pointed out that the CACS is celebrating its 25th anniversary. He restated the mission of the CACS and stressed that the CACS is in the business of "building bridges," both among Chinese-American chemical professionals and to other communities. He thanked the financial support of corporate sponsors.

Dr. Catherine T. Hunt, the president-elect of the American Chemical Society (ACS) and leader of Technology Partnerships in Rohm and Haas Co., delivered the first keynote speech. She shared her experience in setting up and managing partnerships with various companies and government agencies, pointing out the importance of cross-organizational and international collaborations in today's global economy. She also shared her agenda for the ACS, which is to promote education, collaboration, and innovation. She commended the CACS for making a great effort in helping both its own members as well as reaching out to other organizations to advance the cause of the American chemical enterprise, and spoke enthusiastically in support of CACS' effort in co-organizing the Beijing International Chemical and Pharmaceutical Intellectual Property Forum, which was held in late April, 2006. She presented the book "Green Chemistry – Theory and Practice" to members of the Tri-State CACS executive committee and another book "Successful Woman Chemists" to the female members of the committee.

Dr. Mark Powell, senior vice-president of Pharmaceutical Development at Bristol-Myers Squibb Pharmaceutical Co., delivered the 2nd keynote speech. Dr. Powell shared his vision on pharmaceutical industry, particularly in pharmaceutical research, in the 21st century, using examples of recent technological advances in his own company. He foresees consolidation in the industry and predicts that the drug development process will be a much more integrated process, from discovery, lead evaluation, to clinical trial. Multiple-parallel experimentation will replace single experimentation. In-line, real-time monitoring of reactions and processes will supplant off-line or at-line, delayed one. In the end, he pointed out, it is an exciting time to be a scientist and working in drug development. Both speeches by Drs. Hunt and Powell generated extensive discussions with the audience.

As a tradition, the symposium also featured outstanding Chinese-American chemists. Dr. Margaret Wu, Senior Scientific Advisor (the highest technical rank group at ExxonMobil) at the Corporate Strategic Research of ExxonMobil and the recipient of 2005 Thomas Alva Edison Patent Award, gave an overview of the state-of-the-art in lubricant science and technology. She spoke on both aviation lubes (for airplane and space shuttle, etc.) and automotive and machinery lubes, especially on the development of an advanced lubricant, Mobil 1[®], to which she made a significant amount of contribution. This advanced lube product is used in all world-class racing

Continued in page 2

CACS – Co-Organizer of Successful Beijing International Pharmaceutical and Chemical Intellectual Property Forum

The Beijing International Pharmaceutical & Chemical Intellectual Property Forum, initiated by the Tri-State CACS and co-organized by the CACS, the Division of Chemistry and Law of the ACS, China Intellectual Property Society (CIPS), and China International Economic and Trade Arbitration Commission (CIETAC), was held in the Asia Hotel in Beijing on April 25-28, 2006. This Forum was the first international intellectual property conference in the area of pharmaceutical and chemical industries held in China. It drew dignitaries such as deputy assistant secretary of the US Department of Commerce and US coordinator for intellectual property enforcement, Mr. Chris Israel, and deputy commissioner of China State Intellectual Property Office, Mr. Hua He. It also drew media coverage from Reuters, Bloomberg, China CCTV, and China Daily, among others. Three hundred and fifty participants from six countries attended this IP Forum.

Representing the CACS, Dr. Guang Cao, the current president of Tri-State CACS and co-chair of the organizing committee, and Ms. Sunny Wang, the Tri-State CACS communications director, attended the Forum. Also heading the US contingency was Mr. Brian Meadows, the current chairman of the Division of Chemistry and Law of the ACS and co-chair of the organizing committee. Dr. Cao delivered his opening remarks and read a congratulatory letter from Dr. Bill Carroll, the immediate past president of the ACS and a member of the international advisory committee for the IP Forum.

About 20 IP experts and attorneys from the US made presentations at the Forum. Mr. James Hilboldt, senior corporate counsel of Pfizer Global Pharmaceutical, and Mr. Bruce Story, director of intellectual capital management for performance plastics and chemicals R&D at Dow Chemical Company, gave their perspectives on the importance of IP system on economic development and the impact of IP rights on the shaping of business strategies in their respective pharmaceutical and chemical industries. The distinguished speaker list also included Mr. Thomas Irving of Finnegan, who's recently named one of the best lawyers in America by the publication *The Best Lawyers in America*, the Honorable Paul Luckern, an administrative law judge from the Office of the Administrative Law Judges of the US Federal Trade Commission, Mr. Anthony M. Insogna of Jones Day who has been named among the best 20 attorneys under 40 in California, and Ms. Esther Lim of Finnegan, who has been recently named one of the best lawyers in America by the National Asian Pacific American Bar Association (NAPABA). These US IP experts spoke on the developments and trends of IP laws in the US, and some particulars as related to the pharmaceutical and chemical industries, such as the impact of Hatch-Waxman Act and the recent high-profile case involving Lipitor. These talks were well received by the predominantly young Chinese participants (because the legal profession has less than 25 year history in China), and were often followed by lively Q&A sessions.

Some 10 distinguished Chinese IP professionals from IP-related government agencies and IP law firms gave presentations on the development and issues of China's IP system, particularly on the development of patent systems. "I was impressed by the commitment the senior officials from the State Intellectual Property Office are making toward encouraging

See pictures below and the text continued in Page 22



Key organizers: Ms. Sunny Wang (CACS), Dr. Guang Cao (CACS, co-chair), Mr. Chunshan Zhao (CIPS, chair), Mr. Brian Meadows (ACS-CHAL, co-chair), and Mr. Xiushan Ma (CIPS).



Conference in session.

Awards and Recognition

Dr. Norman Li Honored at NAMS'06

Dr. Norman Li, President, NL Chemical Technology, Inc. as well as CACS Board Member and GLCACS Board Chair, was honored at the 2006 North American Membrane Society Meeting (NAMS'06) for his outstanding accomplishments in the field of membrane/separation science and technology. A special session was held at the meeting in honor of Dr. Li, and seven invited speakers gave presentations.

Dr. Li is an internationally renowned chemical engineer and has a distinguished career of 43 years in chemical and petroleum industries. He was a senior research scientist with Exxon (1963 to 1981), Director of Separation Science and Technology at UOP (1981 to 1988), Director of Research and Technology at AlliedSignal Company (now part of Honeywell, 1988 to 1995). Since 1995, Norman is the president of a technology development company, NL Chemical Technology, Inc. in Mount Prospect, Illinois, which he founded. He holds 45 US patents, has published more than 100 technical papers, and has edited 20 books on separation science and technology with a new one to be published by Wiley this year.

Dr. Norman Li has made outstanding contributions in separation science and technology in general, and in the membrane science and technology in particular. In his early career at Exxon, he was the first one to define the transport mechanism of organic gases through polymeric membranes at elevated pressures. Because of this pioneering work, he received the honor of serving as a consultant on gas permeation through polymers for the US Apollo Moon Landing Project. He later developed the liquid facilitated transport membrane. In this breakthrough invention in separations, Dr. Li incorporated reversible chemical complexation reactions in the membrane system to drive the separation. The invention and development of this new concept have applications in the areas of water treatment and microencapsulation. They also have made major impact on the principles of separation processes. Dr. Li co-invented the Mixed Matrix Membrane while working at UOP Company. In the last several years, he has focused his effort on water treatment and reuse. He invented the High Flux (or Low Energy) Reverse Osmosis Membrane in 2000 and developed the industrial process to manufacture it. This type of membranes is critically needed in water treatment, including desalination processes.

Because of his distinguished scientific contributions, Dr. Li has received the Perkin Medal from the Society of Chemical Industry, which is regarded as the highest honor in the United States' chemical industry. He has a rare distinguished honor of being a member of 3 academies, National Academy of Engineering, USA, Chinese Academy of Sciences in China, and Academia Sinica in Taiwan. He has also been recognized by two AIChE institute awards (the Alpha Chi Sigma Award for Chemical Engineering Research and the Chemical Engineering Practice Award), one division award (the Clarence Gerhold Award, Separations Division), and one section award (the Ernest Thiele Award, Chicago Section). He has been selected as the recipient of the 2006 AIChE Founders Award (see next page). In addition, he received the inaugural Fujimura Award from the 6th World Congress of Chemical Engineering for his lifetime achievements and the ACS Award of Separation Science and Technology. He also has a long and distinguished record of serving NAMS, AIChE, ACS as well as CACS.

Norman Li Selected as Recipient of 2006 AIChE Founders Award

Dr. Norman Li has been selected as the recipient of the 2006 Founders Award of the American Institute of Chemical Engineers (AIChE). This award recognizes a member of AIChE who has had outstanding contributions to and an important impact on the field of Chemical Engineering, and whose achievements, either specific or general, have advanced this profession in any of its aspects. The recipient should have a long and distinguished record of service to the profession, including both technical and professional activities. The presentation of this award will take place at the Institute's Honors Ceremony on November 12, 2006 at the AIChE Annual Meeting in San Francisco.

L. S. Fan Elected to Academia Sinica

Dr. L. S. Fan, Distinguished University Professor and C. John Easton Professor in Engineering in the Department of Chemical and Biomolecular Engineering Department at the Ohio State University, was elected to Academia Sinica on July 6, 2006, in Taipei. This recognition came on the heels of an ACS award that Dr. Fan had received on March 28, 2006: the E. V. Murphree Award in Industrial and Engineering Chemistry.

Professor Fan, also known as "The Flowmaster," has made pioneering contributions to the theory and practice of fluidization and multiphase flow, powder technology, and energy and environmental reaction engineering. He has been widely known for his invention and commercialization of clean coal processes including OSCAR (Ohio State Carbonation Ash Reactivation) and CARBONOX (carbon-based NO_x reduction technology). Professor Fan, a member of the National Academy of Engineering, has been with the Ohio State University for 28 years. He was the recipient of the 2005 Sullivant Award, the university's highest honor.

Winston Ho Selected as Recipient of 2006 Institute Award for Excellence in Industrial Gases Technology by AIChE

Dr. W.S. Winston Ho, University Scholar Professor in the Department of Chemical and Biomolecular Engineering and the Department of Materials Science and Engineering at the Ohio State University, has been selected as the recipient of the 2006 Institute Award for Excellence in Industrial Gases Technology by AIChE. He is recognized for his pioneering and sustained contributions to novel gas separations, gas treating invention and commercialization, new membranes and their novel applications for gases. The presentation of this award will be at the Institute's Honors Ceremony on Nov. 12, 2006 at the AIChE Annual Meeting in San Francisco.

This award recognizes an individual's sustained excellence in contributing to the advancement of technology in the production, distribution and application of industrial gases. The recipient will have a record of sustained contributions that have advanced the frontier of industrial gases technology. These contributions may be characterized by a sustained record of important fundamental research, innovation, technological development or the novel application of technology, either fostering or leading to important commercial results. This award is sponsored by Praxair, Inc. Professor Ho, a member of the National Academy of Engineering, USA, is one of the two editors of the widely used Membrane Handbook.

Features

Challenges for Chemists

Charles P. Casey
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Madison, WI 53704 USA

Abstract: Chemical scientists are encouraged to focus on the key challenges facing chemistry. To advocate for support for the chemical sciences, we need to articulate the major societal problems that require advances in basic chemical sciences, the advances in basic chemical sciences that enable new opportunities for chemical scientists, and the modern achievements of basic chemical sciences that have had major impacts on our science and our society.

During my tenure as President of the American Chemical Society in 2004, I have tried to focus attention on the challenges that chemical scientists face. Some of these challenges are ones that were outlined in the National Research Council report "*Beyond the Molecular Frontier: Challenges for Chemistry and Chemical Engineering*". This report comes at a critical time when the challenges that chemists and chemical engineers face continue to grow. More than two years in the making, the report had more than 170 contributors, and was prepared by a committee of 17 distinguished chemists and chemical engineers, co-chaired by Ronald Breslow, and Matthew V. Tirrell.

Beyond the Molecular Frontier is the latest in a series of reports from the NRC on the future of chemistry and chemical engineering. While previous reports focused either on chemistry (Westheimer report in 1965 and the Pimentel report in 1985) or chemical engineering (Amundsen report in 1988), it is significant that the latest report covers both areas and underscores the growing importance of interdisciplinary cooperation between chemists and chemical engineers. These earlier reports were important in setting the direction of chemistry and chemical engineering in the US, and I hope that *Beyond the Molecular Frontier* will also influence the direction of chemistry and chemical engineering.

The report offers us a snapshot as well as a vision: a snapshot of where research in the chemical sciences stands today, and a vision of how advances that seem possible in the near term could contribute to a brighter future. Above all, it presents "grand challenges" as well as wonderful opportunities for chemical professionals and for society.

Dr. Charles P. Casey is Homer B. Adkins Professor of Chemistry at the University of Wisconsin-Madison. His research focuses on mechanistic organometallic chemistry. Current studies focus on the mechanism of hydrogenations involving catalysts that simultaneous transfer of an acidic hydrogen and a metal hydride. He is author of more than 250 papers in organometallic chemistry. He has served as Chairman of the Organometallic Subdivision of the ACS and as Chairman of the Inorganic Chemistry Division of the ACS, and as a member of the editorial advisory board of the *Journal of the American Chemical Society*. He was President of the ACS in 2004. In 1993, he was elected to the National Academy of Sciences and to the American Academy of Arts and Sciences. He received the A.C. Cope Scholar Award of the ACS in 1988, and ACS Award in Organometallic Chemistry in 1991.

I have outlined some of the challenges cited in *Beyond the Molecular Frontier* and encourage the reader to look at the full report and the reports of the workshops that helped to frame it. The challenges and opportunities for each country will be different, depending on local problems and local resources, but many of the challenges will be common to many countries.

Challenges in Synthesis. Chemistry is one of the few sciences that creates new materials rather than simply studying the physical universe. Chemists are challenged to develop highly selective, energy efficient, and environmentally benign new synthetic methods. For example, synthetic chemists will need to devise ways to predictably carry out synthesis on surfaces of semiconductor chips to enable the attachment of genes for use in diagnosis.

Chemists and chemical engineers will need to work together to develop new processes that are greener by design. Atom economy and energy efficiency will become crucial elements to help ensure sustainability of the chemical enterprise. The application of green chemistry principles will help to reduce or eliminate the use and generation of hazardous substances.

Alternatives to Fossil Fuels are a need driven by the finite supply of fossil fuels and by the global warming from CO₂ emissions when they are burned. We are challenged to develop inexpensive and unlimited energy sources to enable a sustainable future. Inexpensive and more efficient photocells will be part of the solution. More efficient methods for nuclear fuel production and safer methods of handling radioactive waste will enable the use of nuclear energy.

For transportation uses, a move towards a hydrogen economy will enable the use of clean energy. Improved methods for transporting and storing hydrogen and improved fuel cells for utilization of hydrogen will need to be developed. Of course, we will still require new energy sources for the production of hydrogen.

Self-assembly and nanoscience hold great promise for the development of interesting new materials. Properties change drastically in the nanometer range; this is the range intermediate between single molecules and bulk materials. As we move towards a revolution in nanoscience, we need to understand the structures of materials on a smaller and smaller scale and of single molecules and self-assembled arrays of molecules on a larger and larger scale. Self-assembled arrays and self-optimizing systems offer the promise of exciting functionality possibly including emergent behavior.

Advances in physical chemistry should lead to understanding how molecules change and react over shorter and shorter time scales and a full range of molecular sizes. The ability to follow reactions over the picosecond (10^{-15} s) timescale will allow the direct observation of bond making and bond breaking. The ability to investigate and manipulate single molecules will open new avenues to the study of reactions. Bond selective chemistry will result from selective laser activation of specific bonds. Computing and modeling of larger systems will open new vistas in biophysical chemistry.

National security and homeland defense will require contributions from chemists and chemical engineers. Chemical plant security needs to be improved by substitution of less toxic chemicals

in processes. Designing processes that minimize the accumulation of hazardous material would increase the inherent safety of plants. We are challenged to develop robust and selective sensors to help protect the nation against disease and terrorism.

Achieving energy independence would have a huge and obvious impact on our security. In my view, the root cause of terrorism is the gap between developing and developed countries. Transferring technology to enable developing countries to set up the most modern and efficient means for energy generation and materials synthesis will help to narrow this gap as will the use of green insecticides and genetic engineering to increase world agricultural production.

Challenges at the interface with biology and with medicine. As chemistry expands into the interfaces with biology, materials science, and environmental sciences, new challenges are presented that will require teamwork between scientists in many disciplines. Biological chemists are challenged to understand the complex interactions among cell components and will need to work on teams with biologists to understand the processes of life in molecular terms. Research at the interface between chemistry and biophysics will be needed to understand how protein sequence determines protein folding, and eventually protein function.

Medicinal chemists are challenged to find new drugs that will operate by mediating protein-protein interactions. Therapies for preservation of memory, for slowing the aging process, and for control of obesity will require fundamental advances. While pharmaceutical chemists have been largely successful in controlling bacterial infections, new drugs for treating viral diseases like AIDS and Ebola are sorely needed. Drugs to better prevent rejection of transplanted organs and biocompatible materials for organ replacement still need to be developed. New ways of delivering drugs to targeted cells would dramatically increase their efficacy. The opportunity present by the determination of the structure of the human genome will be followed by advances in proteomics and bio-informatics that promise to lead to new diagnostic methods and to new therapies.

Challenges at the interface with environmental sciences. Chemists, in cooperation with other scientists, need to develop a better understanding of the atmosphere and the biosphere so that we can maintain a livable environment.

Challenges at the interface with materials chemistry include the design of molecular devices and new materials with predictable and tunable properties. Materials chemists are challenged to design and synthesize new electronic and optoelectronic materials, high temperature superconductors, and new composites and ceramics.

Challenges to communicate. As chemical professionals, we all share the challenge of communicating chemical science's tremendous contributions to society and the increasingly important role that chemical sciences must play in meeting the challenges to our nation's future. To recruit students into chemical sciences, we must convince them that they are *needed* to help meet the challenges of environmental preservation, renewable energy sources, drug discovery, and nanoscale materials synthesis. We will rely on chemical science teachers at all levels to inspire students to use their own potential to unlock chemical science's still hidden secrets. If we

present these needs and challenges to the best and brightest students, we can attract them into the chemical sciences to meet critical human needs.

If I have any criticism of the *Beyond the Molecular Frontier* report, it is that it attempts to be too comprehensive and thus not provide sufficient emphasis and focus. We can all find our favorite problems in the report, but how do we choose those that are the most important? By speaking about the challenges facing chemists and chemical engineers, I have tried to catalyze discussion of the most important problems. To avoid leaving off the listener's favorite challenge, I present lists of five challenges with fifth being "your problem here". I have encouraged audiences to make their own short lists of priorities for chemical research and to share their ideas with me and their colleagues.

Setting Priorities. I urge all chemical scientists to make a list of five major societal problems that require advances in basic chemical sciences, five advances in basic chemical sciences that enable new opportunities for chemists, and five modern achievements of basic chemical sciences that have had major impacts on our science and our society. As you read this article, I hope you will think about your personal list and what you could do to contribute to advances in chemical science. Chemical scientists need these shorter and more focused lists of challenges when presenting the case for support of chemical sciences to the public and to leaders of government science agencies not in the chemical sciences.

My own list of the five most important societal problems that will require advances in basic chemical sciences is shown below (**List 1**). When I present this to audiences, I have found that there is general agreement with the list and a variety of suggestions for a fifth problem. Suggestions have included enabling human space travel, developing useful molecular machines utilizing nanoscience, attacking global warming by development of CO₂ sequestration, understanding chemical communication mechanism, and promoting technology transfer to developing countries so that they can use the safest and most modern means of energy generation, and materials synthesis.

List 1. Five Major Societal Problems That Require Advances in Basic Chemical Sciences

1. Conquer disease: anti-viral drugs, drugs to prevent or cure Alzheimer's, malaria, tuberculosis, etc
2. Solve our energy problems by developing sustainable energy sources: solar, nuclear energy; fuel cells for transportation (H₂, CH₄ and CH₃OH)
3. Clean the environment: materials from renewable or recycled resources, environmentally benign pesticides and fertilizers
4. Deter terrorism: sensors to detect biological and chemical warfare agents
5. Your problem here

We all find it much more difficult to think of advances in basic chemical sciences that will enable new opportunities (**List 2**). Consider how hard would it have been 50 years ago to conceive of the advances in structure determination that would be enabled by the development of nuclear magnetic resonance spectroscopy! In response to my second list, I've received other suggestions including development of techniques to directly observe very low concentrations of reactive intermediates which would revolutionize mechanistic chemistry, and understanding the

molecular basis of life processes. The later would require an understanding of the self assembly of complex systems, self replication, and systems for energy generation; these advances could lead to an understanding of the molecular origin of life on earth.

List 2. Five Advances in Basic Chemical Sciences That Enable New Opportunities

1. Selective catalysts for direct oxidation of hydrocarbons by molecular oxygen: revolutionary routes to oxygenated materials
2. Computations accurate and powerful enough to predict non-covalent interactions: predict protein folding and protein-protein interactions
3. Nanoscience and molecular self assembly: multiproperty nanoscale materials; molecular organization in complex systems
4. Better understanding of electron transport leading to improved photovoltaic devices and fuel cells
5. Your Advance Here

For chemical scientists, it's easy to think of many modern achievements of basic chemical sciences that have had major impact on society. The difficult task is to limit the list to five. As an organometallic chemist, I had an easy job in filling the top of my list (**List 3**). Other suggested important achievements of chemical sciences included the introduction of chlorofluorocarbons to resolve stratospheric ozone depletion, advances in computational chemistry including density functional theory for handling larger molecules, laser chemistry, the development of higher temperature superconducting materials, and the determination of the structure of the human genome.

List 3. Five Modern Achievements of Basic Chemical Sciences with Major Impacts on our Science and our Society.

1. Organometallic catalysts: olefin metathesis, single site polymerization, enantioselective catalysts
2. New pharmaceuticals for mental illness, blood pressure, etc
3. Nuclear magnetic resonance and mass spectrometry for structure determination of biomolecules
4. Atomic microscopy and single molecule spectroscopy
5. Your suggestion here

I am convinced that if chemical scientists focus our creative energy on today's challenges, we can turn them into opportunities for tomorrow's achievements.

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At the end, Outstanding Achievement Award and Outstanding Service Award was presented to Dr. Norman Li and Dr. Xiaomao Wu (Principle Scientist at Abbott Lab), respectively. Dr. Bing Sun, GLCACS President, highly appraised unparallel contributions of Dr. Li and unselfish service offered by Dr. Wu in the past 10 years in founding, fostering and growing GLCACS. She also asked young members to follow the track in serving the society and the community. (by Lin Li & Bing Sun)

Announcements

CACS Young Chemist and Chemical Engineer Awards

Purpose: To promote young chemists and chemical engineers among Chinese-Americans, CACS is proudly to announce the Young Chemist and Chemical Engineer Awards program to recognize excellence of outstanding high school students to develop their careers in chemistry and chemical engineering-related fields upon entering college. This Award consists of a certificate and a small token of gift (\$50).

Eligibility: Students in high schools who are the children of CACS members.

Deadline for applications: September 15 each year.

Winners to be announced not later than October 15 in the same year.

Requirements for applicants are:

1. Students in high schools
2. Providing name, phone number, mailing address
3. Providing transcripts, proposals or essays (one page)
4. Providing any other supporting documents (optional)

Please send applications to Dr. Chu-An Chang, 21 Jerome Avenue
Piedmont, CA 94611, Tel: (650) 554-2113 or email to: changen@appliedbiosystems.com

Continued from Page 13

innovation protected by intellectual property," commented Mr. Bruce Story of Dow Chemical. "The large attendance at the IP Forum by IP professionals from the domestic pharmaceutical and chemical industries was indicative of the increasing level of IP interest and sophistication occurring in China," continued Mr. Story, "China has obviously recognized that a well established IP system is beneficial for the development of its economy."

This IP Forum was the first IP conference in China that involved Chinese government agencies and that was financed entirely by private sponsorship and conference fees. "This is a successful learning experience for us," commented Mr. Chunshan Zhao, the secretary general of CIPS and the chair of the organizing committee.

The success of this IP Forum has already spurred discussions about having a sequel in 2008. Dr. Raymond Parker, associate VP and head of internal medicine US patent operations at sanofi-aventis, and Ms. Esther Lim of Finnegan are leading the effort. They have asked for, and received promise of, assistance from the CACS. (Reported by Guang Cao and Sunny X. Wang)

CACS Keynote Speeches

Development of Next Generation Coolants Using Nanofluids for Advanced Vehicles

Simon C. Tung, Technical Fellow, General Motors R&D Center, Warren, MI

Abstract – The development of many advanced technologies is hampered by a vital need for ultra-high-performance cooling. The conventional approach for enhanced cooling has reached its limits. Recently different formulations of nanofluids are being developed to meet this need. Several research teams in the tribology community have successfully created "nanofluids" by suspending nanoparticles in conventional heat transfer fluids. Nanofluids, stable suspensions of solid nanoparticles with typical length scales on the order of 1 to 100 nm, can conduct heat one order of magnitude faster than scientists had predicted possible. The realization that nanofluids have excellent thermal properties promises to bring about a revolution in cooling technologies.

Because the intriguing thermal properties of nanofluids cannot be explained by conventional macroscopic theories, new theoretical models have been proposed. However, the validity of these competing theoretical models is still undefined. The nanoscale structure of nanoparticles in nanofluids is being explored experimentally. In addition, the mobility-enhanced energy transport of nanoparticles is being studied experimentally and theoretically. These efforts will lead to the development of a new model of energy transport in nanofluids, which takes into account the nanoparticle size, shape, structure, and mobility effects on the nanofluid thermal properties. Despite recent studies by many research teams in the world, the basic mechanisms of energy transport in nanofluids remain incompletely understood. Therefore, this interdisciplinary research presents an opportunity to explore new frontiers of nanoscale thermal sciences for the design and engineering of next-generation coolants. In this talk I will cover a broad scope of nanofluids and highlight the state-of-the-art of this field and our future research. In addition, the automotive perspectives for future nanotechnology applications will be presented.

Dr. Simon C. Tung received his Ph.D. in Chemical Engineering from Rensselaer Polytechnic Institute, Troy, New York, in July 1982. In 1982, Dr. Tung joined General Motors Research Laboratories. At present, he is General Motors Technical Fellow. He is responsible for leading R&D on automotive tribology and surface engineering in automotive powertrain and manufacturing systems. In 1985 – 1990, Dr. Tung led pioneering research efforts resulting in the integration of new transmission clutch and advanced engine components. He was a recipient of the SAE Arch T. Colwell Merit Award in recognition of his outstanding contribution on automotive engineering in 1986. He was also the recipient of the 1992 STLE Captain Alfred E. Hunt Award and the 1995 ASM Technical Merit Award. In 1998, Dr. Tung was elected as the STLE Fellow for his outstanding achievement in tribology and surface engineering. Dr. Tung's technical expertise includes automotive lubricants, surface engineering, powertrain tribology, advanced materials, and manufacturing process. In addition to technical achievement, he is very active in SAE and has been selected as the Vice-Chairman of Lubricants in the SAE Fuels and Lubricants Activity. He also received the highest honor from SAE to elevate to the SAE Fellow in March 2001. In 1999, he received the highest honor-Gold Award from the Engineering of Society of Detroit (ESD) to recognize his outstanding achievements in engineering and leadership. Dr. Tung has 78 publications that appear in 5 different journals, covering such diverse subjects as advanced materials, surface engineering, automotive engineering, and manufacturing. He also holds ten U.S. Patents on novel tribological coatings and methods for reducing friction and wear.

Modeling of Hydrocarbon Processing

Dr. Teh C. Ho, Corporate Research, ExxonMobil Research and Engineering Co., Annandale, NJ

Abstract – Driven by the global competition and market demand, the petroleum industry is under increasing pressure to produce clean, high-value products from low-cost feedstocks with minimum capital outlays. This has triggered an urgent need to develop robust process models capable of predicting the effects of feedstock composition, operating conditions, and catalytic properties on product quality. Preferably, the model should have such a high resolution that it allows diverse refinery streams to be managed at a molecular level. Given the daunting complexities of the composition and reactivity of hydrocarbon streams used in the petroleum industry, model developers must play a dual role: splitter and lumping. That is, one first splits the reaction mixture at the molecular level, examines microscopic interactions among individual reactions, and then works all the way up to the macroscopic level. Along the way one must perform lumping to keep the size and complexity of the problem at bay. This is not only crucial for practical applications, but also important for fundamental understanding, since one does not want to lose sight of the forest for too many trees. This talk gives an overview of new and emerging theoretical tools for building kinetic models for hydrocarbon processing.

Dr. Teh Ho's research has been primarily in the area of catalytic conversion of hydrocarbon feedstocks. He has been instrumental in commercializing new hydroprocessing and catalytic cracking technologies. He is on the editorial board of Applied Catalysis A: General.

CHINESE AMERICAN CHEMICAL SOCIETY MEMBERSHIP FORM

_____New Application _____Renewal _____Information Update

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STATEMENT OF CACS OBJECTIVES

1. To promote fellowship among Chinese-American chemists, chemical engineers and those working in related professions.
2. To enhance communication and professional interaction among members.
3. To provide a forum for the discussion of issues of mutual interest and concern.
4. To create opportunities for members to share their professional experiences and to participate in joint research and business opportunities.
5. To provide a network for mutual professional enhancement and career development.
6. To provide career counseling for young people who are interested in science and engineering careers.
7. To encourage scholarly achievement in chemistry and chemical engineering, and to recognize those individuals who have made outstanding contributions to chemical science and technology and to the service of the chemical profession.
8. To facilitate interaction between CACS and other scientific organizations and communities.

Forthcoming CACS Activities

Members, Non-members, Friends, Students, Family Members Are All Welcome

232nd ACS National Meeting San Francisco, CA Monday, September 11, 2006

Social Hour	6:00 – 7:00 PM	Open to all ACS Attendees Kan's Restaurant 708 Grant Avenue, San Francisco, CA Tel: 415-362-5267
Banquet and Keynote Speech	7:00 – 9:30 PM	Kan's Restaurant Tickets at ACS Registration, \$27/Person Keynote Speaker: Dr. Simon C. Tung Technical Fellow General Motors R&D Center, Warren, MI <i>Development of Next Generation Coolants Using Nanofluids for Advanced Vehicles</i> (See pp. 22 – 23 for Dr. Tung's abstract and bio)

AIChE 2006 Annual Meeting San Francisco, CA Monday, November 13, 2006

Social Hour	6:00 - 7:00 PM	Open to all AIChE Attendees Kan's Restaurant 708 Grant Avenue, San Francisco, CA Tel: 415-362-5267
Banquet and Keynote Speech	7:00 - 9:30 PM	Kan's Restaurant Tickets at AIChE Registration, \$27/Person Keynote Speaker: Dr. Teh C. Ho Corporate Research, ExxonMobil Research and Engineering Company, Annandale, NJ <i>Modeling of Hydrocarbon Processing</i> (See p. 23 for Dr. Ho's abstract and bio)