

華美化學與化工學會

Chinese American Chemical Society (CACS)



February 2005

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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, UOP, 25 Algonquin Road, Des Plaines, IL 60017, or electronically to Lin.Li@uop.com.

Acceptance of Articles:

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

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Dr. Bing Sun, UOP LLC (local Chapter)
Dr. Patricia Sun (Profiles)
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Website for CACS

www.cacshq.org

Website for CACS-Tristate Chapter

www.tristatecacs.org

Website for CACS-Great Lakes Chapter

www.glcacs.org

Message From the Chairman

W.S. Winston Ho

Greetings! I would like to take this opportunity to welcome Dr. David Y. Chang to become our CACS President and Dr. Yi Hua (Ed) Ma to be our CACS First Vice-President for this year. As you may know, David has been Supervisor, Industrial Hygiene Laboratory and Environmental Chemistry at ExxonMobil Biomedical Sciences Inc. in Annandale, NJ. He has demonstrated his leadership by playing an important role for several organizations. He served as the President of the CACS Tristate Chapter in 2000. He founded the Hillsborough Chinese Language School in NJ and was elected Vice President of Administration, National Council of Associations of Chinese Language Schools of USA in September 2003. He received his B.S. from Chinese Culture University and his Ph.D. in Analytical and Environmental Chemistry from the University of North Texas. Ed is Frances B. Manning Professor of Chemical Engineering and Director, Center for Inorganic Membrane Studies at Worcester Polytechnic Institute, Worcester, MA. He received his B.S. from National Taiwan University, M.S. from the University of Notre Dame, and ScD from MIT, all in Chemical Engineering. He has published extensively with over 100 technical publications in the areas of inorganic membranes, adsorption and diffusion in porous inorganic adsorbents, mathematical modeling of transport processes, and hydrogen separation and purification.

I am very pleased to report to you that the national office of CACS this year will organize four CACS events at the national meetings of American Chemical Society (ACS) and the American Institute of Chemical Engineers (AIChE), two for each society. On behalf of our Society, I would like to thank David, Ed, and our CACS Treasurer and Board member, Dr. Chu-An Chang of Applied Biosystems Company, for their great efforts for these events. They have made special arrangements for two upcoming major events: (1) ACS National Meeting in San Diego, CA in March and (2) AIChE Spring National Meeting in Atlanta, GA in April. For the ACS meeting and the AIChE meeting, our CACS Keynote Speakers are Dr. Phoebe K. Dea, Associate Dean of the College and Fletcher Jones Professor of Chemistry at Occidental College, Los Angeles and Dr. Jeffery S. Hsieh, Director of Pulp and Paper Engineering, Professor of Chemical Engineering, and Director of the Center of Excellence for High Yield Pulp Science at Georgia Institute of Technology, Atlanta, respectively. Professor Dea, who is also our CACS board member, will give a lecture on "Beyond the Lily Pond: An Endeavor", and Professor Hsieh will present his lecture on "From Industry and Academia". For these two meetings, please see the detail information in the forthcoming event announcements 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.

On behalf of our Society, I would also like to thank Dr. The C. Ho, Senior Engineering Associate of Corporate Strategic Research Laboratories at ExxonMobil Research and Engineering Company in Annandale, NJ, for his leadership and service as our CACS President in 2004. We would like to thank him, David, and Chu-An for their taking care of the four major events successfully in 2004. We would also like to thank our four CACS Keynote Speakers in 2004; Dr. Hung-wen (Ben) Liu, George H. Hitchings Reagents Chair in Drug Design and Professor of Medicinal Chemistry, Chemistry, and Biochemistry at the University of Texas at

Austin, gave a lecture on “Learning Chemistry from Mother Nature” at the ACS meeting in Anaheim on March 29; Professor Ed Ma presented his lecture on “Inorganic Membranes for Hydrogen Separation” at the AIChE meeting in New Orleans on April 26; Professor Kuang-Yu Chen, Department of Chemistry and Chemical Biology and Department of East Asian Studies, Rutgers University, Piscataway, NJ, delivered a lecture on “A Chemist Venture into Ancient Civilizations: Oracle Bone and Hieroglyphics” at the ACS meeting in Philadelphia on August 23; and Dr. S. Joe Qin, Professor of Chemical Engineering and Quantum Chemical Corporation Endowed Fellowship in Engineering at the University of Texas at Austin, gave his speech on “System Engineering in Non-traditional Industries – Semiconductor Manufacturing” at the AIChE Annual Meeting in Austin on November 9. All their lectures were very exciting, authoritative, and well received.

As you may know, it is indeed quite a large amount of work to organize events for all the four 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. Many thanks to Dr. Lubo Zhou of UOP LLC, 2004 President of Great Lakes CACS Chapter, and Dr. Kuangnan Qian of ExxonMobil Research and Engineering Company, 2004 President of Tristate CACS Chapter, and their supporters for successful symposia on “Diversified Chemistry and Chemical Engineering” and “High-Throughput Technologies”, respectively.

This issue of the CACS Newsletter was under the leadership of Dr. Lin Li of UOP LLC, 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.

As you know, our CACS mission is to promote the fellowship of our members in the fields of Chemistry and Chemical Engineering. The success of the mission depends solely on every CACS member. Please send your comments and/or suggestions on all aspects of CACS matters including the four major events and two Newsletter issues each year to David, Ed, Chu-An, Lin or me. We really appreciate all the support that you have given to our Society and will continue to give to us. Thank you very much for all of your support.

With best wishes to you all for the Chinese New Year!

Society News / Past Activities

CACS National Events at ACS National Meeting in Philadelphia and AIChE Annual Meeting in Austin

CACS members and friends got together during the ACS Meeting in Philadelphia and the AIChE Annual Meeting in Austin. The Philadelphia events, including social hours, keynote speech and dinner, were organized by Dr. David Chang, CACS 2005 President. Professor Kuang-Yu Chen from Department of Chemistry and Chemical Biology and Department of East Asian Studies, Rutgers University, Piscataway, NJ, delivered a lecture on “A Chemist Venture into Ancient Civilizations: Oracle Bone and Hieroglyphics”. See page 12 for a full article of his presentation

The Austin events were organized by Dr. Teh Ho, CACS 2004 President. Dr. S. Joe Qin, Professor of Chemical Engineering and Quantum Chemical Corporation, gave a presentation on “System Engineering in Non-traditional Industries – Semiconductor Manufacturing”. In addition to giving his keynote speech, Prof. Qin also helped to arrange the meeting location.



Dr. Teh Ho (right), CACS President, presented Prof. Qin a plaque to thank him for his keynote speech at the CACS Meeting in Austin.

GLCACs Planned to “Shape the Future”

Great Lakes Chapter CACS (GLCACs) held its last working committee meeting of 2004 on December 10th, 2004. Fifteen people, including GLCACs Board Chairman Dr. Norman Li and GLCACs Board member Dr. Jane Li, attended the meeting. The meeting started with the “State of the Union” address given by Dr. Lubo Zhou, the organization’s president of 2004. In his speech, Lubo summarized all the achievements during the year. He pointed out that 2004 was a very successful year for the organization: we raised \$4,000 from several companies; we organized an annual conference on June 5, 2004, which was a big success; we improved the organization’s website greatly to make it much friendlier towards its end users; student chapters were also doing very well – five student chapters had been established and actively involved in

the organization's activities, such as the annual conference. At the end of the speech, Lubo also discussed some lessons we learned throughout the year and possible improvements we can make in the future.

The 2005 President of the organization, Dr. Ling Ye, from Hospira, Inc., was introduced during the meeting and was warmly welcome by all the meeting attendees. At the end of the meeting, the officers for 2005 were appointed by Ling, which include:

Shu Jin (Northwestern University) – NW Student Chapter Chair
Lin Li (UOP) – Conference Chair
Wenjin Liu (Northwestern University) – Secretary General
Ming Ni (IIT) – IIT Student Chapter Chair
Bing Sun (UOP) – Newsletter Chair
QiLing Tang (IIT) – IIT Student Chapter Chair Elect
YuChun Wang (Cabot) – Industrial Relations Liaison
David Wu (UOP) – Web Master
Xiaomao Wu (Abbott Labs) – Consultant
Mingdi Xu (Air Liquide) – Community Relations Liaison
ZhiYi Zhang (Abbott Labs) – Industrial Relations Liaison
Lubo Zhou (UOP) – Fundraising Chair

GLCACS' first 2005 working committee meeting was held on Jan. 21st, 2005 in Arlington Heights. The meeting mainly focused on the 2005 annual conference. After about two-hour discussion, it was decided that the 9th annual conference of the Great Lake Chinese American Chemical Society will be held at Abbott Laboratories on Saturday, June 11, 2005. Considering the significant shift of the GLCACS' member demographics in recent years, the theme of this year conference is "Shaping the Future" to emphasize the needs and interests of young members, primarily Ph.D. students and post-docs. For the first time, GLCACS will sponsor a student poster competition with cash prizes (see pp. 23 and 24 for the meeting announcement).

Tristate CACS Sponsors IBC's Annual Drug Discovery & Development Asia Pacific Conference

Tristate CACS, a chapter of CACS, is a co-sponsor of IBC's (International Business Communications) Annual Drug Discovery & Development Asia Pacific Conference on June 1-3, 2005 at Shangri-la Hotel in Singapore. The event website will be www.drugdisc.com/3110. Some interesting features about the event are:

- 50 speakers from over 12 countries and over 25 exhibit booths
- supported by the Singapore Economic Development Board, SCRIP, Science, Biotechniques, Pacific Bridge Medical, and Tristate CACS
- invited keynotes include: Philip Yeo, A*Star Singapore, Kurt Stoeckli, Sanofi-Aventis, Klaus Wilgenbus, Boehringer-Ingelheim, Gianni Gromo, Roche, and Ismail Kola, Merck Research Lab
- Dr. Yuguang Wang, President of Tristate CACS, is a member of the Meeting's advisory board, and he will present the discovery of a new drug for the treatment of Thrombosis, a major cardiovascular disease that has affected millions of old people worldwide.

Awards and Recognition

Dr. John C. Chen Elected as President-Elect of AIChE

Dr. Chen who has just retired as the Carl R. Anderson Professor of Chemical Engineering at Lehigh University will assume the role of President of AIChE (American Institute of Chemical Engineers) in 2006. At Lehigh, Dr. Chen had chaired the Department of Chemical Engineering, directed the University's Institute of Thermo-Fluid Engineering and Science, and served as Dean of the P. C. Rossin College of Engineering and Applied Science. He has served in a number of elected positions at AIChE, including Chair of Heat Transfer and Energy Conversion Division (1983), Chair of National Heat Transfer Conference (1988), Chair of Particle Technology Forum (1994), Director on AIChE Council (1994-1997), and Institute Secretary (2001-2003).

Dr. Teh C. Ho Received the 2004 AIChE R. H. Wilhelm Award in Chemical Reaction Engineering

Dr. Teh C. Ho, 2004 President of CACS, received this Award for his fundamental approach to catalytic processing of hydrocarbon fuels. This Award recognizes an individual's significant and new contribution in chemical reaction engineering for advancing the frontiers of chemical reaction engineering through originality, creativity, and novelty of concept or application. At the 2005 AIChE Annual Meeting in Cincinnati, there will be two special sessions on Oct. 31, 2005 in honor of Dr. Ho. In 2002, he received AIChE's Catalysis and Reaction Engineering Practice Award. Dr. Ho is a senior researcher at ExxonMobil's Corporate Strategic Research Laboratories where he has held various technical leadership positions. CACS Newsletter published his profile in the Spring 2003 issue.

Prof. Phoebe K. Dea Receiving the 2005 ACS Award for Research at an Undergraduate Institution

Dr. Phoebe K. Dea, Board member and past President of CACS, is the recipient of this Award that honors "a chemistry faculty member whose research in an undergraduate setting has achieved wide recognition and contributed significantly to chemistry and to the professional development of undergraduate students." Dr. Dea is the Fletcher Jones Professor of Chemistry and the Associate Dean of the College at Occidental College, Los Angeles. During her career, Dr. Dea has supervised 116 undergraduate students to do research in her laboratory, which led to more than 100 scientific publication/presentations by students. Most of the students went on to graduate and professional schools. Several received the prestigious Goldwater Scholarship and NSF Graduate Fellowship. She has been especially successful at encouraging women and minority students on this path of achievement. Professor Dea's influence extends beyond her own laboratory; she has organized multiple undergraduate research conferences, reached out to economically disadvantaged and minority high school students, and participated in national organizations promoting early science education.

Prof. Chi-Huey Wong Receiving the 2005 ACS Award for Creative Work in Synthetic Organic Chemistry

Dr. Chi-Huey Wong, Ernest W. Hahn Professor of Chemistry at Scripps Research Institute, is being honored with this Award for his pioneering contributions to enzyme-based and programmable one-pot organic synthesis of biomolecular compounds such as carbohydrates and glycoproteins. These compounds are often so complex and have so many variations that they are among the most difficult targets of organic synthesis. Professor Wong received B.S. and M.S. at National Taiwan University and Ph.D. in organic chemistry at MIT. He is a member of the American Academy of Arts & Sciences and the U.S. National Academy of Sciences.

Prof. Peidong Yang Receiving the 2005 ACS Award in Pure Chemistry

Dr. Peidong Yang, Associate Professor of Chemistry at the University of California at Berkeley, is the recipient of this Award for his innovative synthesis of semiconductor nanowires and nanowire arrays and his demonstration of optically pumped lasing in the nanowire materials. Prof. Yang received his B.S. from the University of Science and Technology of China in 1993 and his Ph.D. from Harvard University in 1997. After two-year postdoctoral experiences at the University of California at Santa Barbara, Dr. Yang joined UC Berkeley in 1999, and since then he has earned numerous awards and honors. He is now widely regarded as a leading researcher in the field of nanomaterials.

Prof. Lai-Xi Wang Received the 2004 Young Investigator Award from the ACS Division of Carbohydrate Chemistry

Dr. Lai-Xi Wang, an Assistant Professor and Head of the Laboratory of Bioorganic Chemistry at the Institute of Human Virology, University of Maryland, received this Award for his work in carbohydrate HIV vaccine and bioorganic synthesis of glycoproteins. He earned a Ph.D. in Organic Chemistry from the Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, and did his postdoctoral studies at Johns Hopkins University and MIT before joining the faculty at the University of Maryland. Dr. Wang's research interest is at the interface of chemistry and biology. The central theme of his current research is to develop an effective vaccine against HIV, the human immunodeficiency virus that causes AIDS.

CACS Leaders Honored at the 1st Indo-US Joint Chemical Engineering Conference

This Conference was held in Mumbai, India, December 28-30, 2004, and it was sponsored by the Indian Institute of Chemical Engineers and AIChE. Participating at this conference were 4 CACS members, Dr. Winston Ho (CACS Board Chair), Dr. Jane C. Li (life member of CACS and member of GLCACS Board), Dr. Norman Li (past CACS Board Chair and present GLCACS Board Chair), and Dr. Ralph Yang (CACS Board member and past GLCACS President). Drs. Ho, Norman Li, and Yang had the honor of being the Chemcon Distinguished Speakers, and Dr. Jane Li was Chair of the session "Six Sigma and Global Quality Management." Drs. Ho and Yang also chaired sessions on membranes and adsorption, respectively.

Profiles

The Power of Passion – Professor Jeffery Hsieh

Jeffery S. Hsieh is the Director of Pulp and Paper Engineering, Professor of Chemical Engineering, Director of the Center of Excellence for High Yield Pulp Science at Georgia Institute of Technology and adjunct professor at the Institute of Paper Science and Technology. In February 1995, during the TAPPI (Technical Association of Pulp and Paper Industry) Annual Conference in New Orleans, LA, he was honored as a TAPPI Fellow for his meritorious service to the association and the industry. As the world's largest technical association for paper and related industries, TAPPI has 12 technical divisions with more than 33,000 members global-wise, among whom only one percent holds the title Fellow.



If you imagine the owner of so many titles as a serious, old-fashioned and inflexible pedant, you're absolutely wrong! Prof. Hsieh is a very easygoing and versatile person, his genuine, intelligence, sense of humor and colorful personality can easily affect everybody around him. He is recognized as a tireless worker, a superb educator, a prolific writer, an expert in pulping and bleaching, ... for every role he is playing, he is a sparkling 'star'. What's his secret of success? It is all attributed to his power of passion, the passion for his research, students and life.

'Double Agent' and Ambassador

Prof. Hsieh graduated from National Taiwan University with a B.S. and then earned his M.S. and Ph.D from Syracuse University, New York, all three degrees in Chemical Engineering. 'Chemical Engineering offers the combination of mysterious chemistry and its practical commercial application.' He said, 'the generic chemical engineering unit operations are similar in both chemical and paper manufacturing processes.' Therefore, from 1973 to 1983, at the early stage of his career, he worked as a 'double agent' for both chemical industry and paper industry. While preparing his dissertation in Chemical Engineering, he also did research in Empire State Paper Research Institute as a Research Associate. Then Scott Paper Company made him a nice offer for investigating novel paper technology. A few years later, he held a research position with E.I. DuPont de Nemours & Company for chemical research, development and manufacturing till he joined Georgia Tech faculty in 1983. Talking about the years working with DuPont, he still represented great gratitude; 'it gave me industrial experience both in commodity and high tech specialty chemical business.' If you were given more than one opportunities, don't feel hesitant to try all, because any of them may open a whole new world for you.

Prof. Hsieh is currently an active member of the Pulp Bleaching and Secondary Fibers Committees of TAPPI's Pulp Manufacture Division and the faculty advisor to Georgia Tech's TAPPI Student Chapter. But he never forgot his root in chemical engineering. He is also a member of the American Institute of Chemical Engineers (AIChE) and was President of Forest

Products Division of AIChE from 1991 to 1993. Due to his continuous effort on promoting the interaction between AIChE and TAPPI, AIChE Forest Products Division technical sessions were presented at TAPPI Annual Pulping Conferences in Boston in 1992, Atlanta in 1993, and San Diego in 1994. The expansion of future interaction is a win-win situation for both TAPPI and AIChE.

Leader and Mentor

Since joining Georgia Tech's Pulp and Paper Engineering Program in 1983, Prof. Hsieh has served as Director of Pulp and Paper Engineering and influenced significant growth in student enrollment, the number of research projects and technical articles produced. In recognition of this growth, the paper industry elected to change the informal Georgia Tech Pulp and Paper Advisory Committee into the Georgia Tech Pulp and Paper Foundation Board. This change synergistically compliments the relocation of the Institute of Paper Science and Technology from Appleton, Wisconsin to Atlanta, Georgia.



In the above picture, you can see Prof. Hsieh with his students in a hand glider competition. The wings of the glider were made of paper material.

Besides the administrative work, Prof. Hsieh also spent lots of time on research and teaching. As a highly beloved professor, his enthusiastic “hands-on” teaching style and clear explanation of fundamental knowledge applied to practical situations are well received by his students. What’s the key to become a good teacher? He said, “Love my students with my heart and help them to learn.” “It’s very important to generate their passion on what they want to do. Without that, you’re just training a technician. Once they are motivated, you just have made students in giving their maximum potential.” “And working closely with my students makes me feel young.” he added.

Researcher and Inventor



Prof. Hsieh's major research interests are in the mass transfer and reaction kinetics of chemical engineering in application to manufacturing processes. One area of concentration was to use various kinds of technologies to develop Zero Discharge Effluent for achieving the best environmental control strategy. The recent effort is adding the electrical field application (based on his U.S. Patent 5,238,538, entitled "Methods for Deinking Recycled Fiber by Applying Direct Current Electric Field") to many existing separation processes for better purification, higher yield, stronger fiber quality, enhanced sticky removal, more effective slime control, ... and many applications for several industries. The basic idea of the method is to apply a direct current electric field on fiber slurry by using a de-inking cell to draw ink away from fiber surface. The ink is then separated from the fiber network via electrocoagulation and floated to the slurry surface with the aid of gas bubbles generated during the application of the electric field.

In addition to his contributions to numerous publications on many industrial projects during his earlier 30 years service with the paper industry, Prof. Hsieh has published an additional 60 technical and proceeding papers plus numerous other research reports during his last 20 years at Georgia Tech. He has also authored "Mixing Processes in the Flocculation of Microcrystalline Cellulose Sols with Cationic Polymers" in *Polymer Colloids II*, edited by Robert M. Fitch and published by Plenum Press, New York and London.

Despite of his impressive accomplishments, Prof. Hsieh said he also experienced some difficult times in his career; "The lowest point was the transition from his industrial job to the academic career. In industry, you just need to focus on job performance and never need to worry about budget. In academia, you have to look for money on everything you would like to do. However, once you have built the reputation and program infrastructure, you will enjoy the freedom and consulting work you are doing around the world. With a good networking, that is the best job you can find."

Another story he shared was about solving a multi-component adsorption process in a fixed bed column. His approach was to assume a dummy species in the solid phase so that the process could be considered as an ion-exchange system, which could be described by an existing mathematics model. "The question is how to define the 'dummy species. Are there a million of them or just one?" It took him lots of time and effort. Finally he got the answer, and he regarded that as one of the most rewarding moments in his career. "Taking the short end of a stick in the short term will translate into getting a longer end of the stick in the long term." No matter good or bad, with the passion and persistency, he learnt from every step in life and conquered one difficulty after another.

Continued on page 16

Fuel for Life – Dr. Ke Liu

Dr. Ke Liu got his B.S. in Chemical Engineering in 1984 and M.S. in 1987 from the Chinese Academy of Science in Beijing, and he worked there before he entered the Ph.D. program in the City University of New York (City College). He had a post-doc position in Exxon's Corporate Research Lab., and worked for Exxon-Mobil for a total of 7 years on various catalysis and reaction engineering technologies. After that, he worked at Monsanto (Solutia) on new polymer membrane development and at UTC Fuel Cells (a UTC joint-venture with Shell – HydrogenSource) on fuel processing technologies for fuel cells till he joined GE Global Research in early 2004.

During his years at UTC Fuel Cells, as System Leader of the gasoline powered fuel-cell vehicle research program (which was a big joint R&D program among UTC, Shell and Nissan), he worked with the team and developed the state-of-the-art on-board gasoline fuel processor. Fuel processors are the devices that convert hydrocarbon fuels like gasoline or natural gas into a hydrogen-rich gas. Hydrogen is supplied to a fuel cell as the main ingredient for its electrochemical process. A patented Catalytic Partial Oxidation (CPO) technology was utilized in the fuel processors to reform hydrocarbon fuels. The key attributes of the technology are its compact size, integrated design and rapid start time, which are the keystones to producing affordable fuel processors for all applications. The new 78-liter system was designed to fit under the chassis of a fuel cell-powered automobile, enabling the car to be operated on currently available fuels. It only takes less than 4 minutes from room temperature until the production of fuel cell quality hydrogen, a significant improvement from the industry reports of as much as 30 minutes.

With the new technology, customers can refuel fuel cell cars in the same way and with the same fuel as they do today, and fuel cell auto manufacturers will be able to offer vehicles with an extended driving range compared to storing hydrogen on-board. Therefore, on-board gasoline-to-hydrogen fuel processors would provide a seamless transition from today's gasoline fueling infrastructure to the hydrogen economy, resulting in a quicker introduction of the environmentally friendly fuel cell vehicles.

Dr. Liu also led a team at the UTC-Shell Joint Venture for developing new sulfur tolerant water-gas-shift (WGS) catalysts as well as sulfur traps for proton-exchange membrane (PEM) fuel cell power plants in collaboration with Sud-Chemie and United Technologies Research Center (UTRC). A critical step in fuel processing is the water gas shift reaction, which reduces carbon monoxide, while boosting hydrogen content. Conventional WGS catalysts use base metals like Cu-Zn, which have been widely used in industry for more than 50 years. However, due to its low activity and pyrophoric (self-heating) nature, the Cu-Zn WGS catalyst requires large reactor volume and suffers from transient issues for transportation, and it is not an option for certain applications like fuel cells. Dr Liu's team proved that it was possible to use a new precious metal WGS catalyst to replace the Cu-Zn catalyst. Endurance data showed that the noble metal WGS reactors were 10 times smaller with similar cost for a same capacity unit in comparison with the base metal catalyst. Furthermore, they are safer and easier to handle, since they are non-pyrophoric. The new catalyst demonstrated high performance for both high and low temperature WGS reactors and sustained performance over many thousands of hours, also in

the presence of sulfur. The identification of this new WGS catalyst was a big news for the industry; Dr. Liu was invited to give a keynote speech at this year's AIChE Spring National Meeting on this topic.

Currently, Dr. Liu is a project leader with GE Global Research, leading a multi-million dollar R&D project funded by DOE and GE. As Project Leader and Principal Investigator, he is leading the GE team and coordinating with scientists from Argonne National Lab and the University of Minnesota for this DOE project. He is also helping to set-up an R&D team on Clean-Coal Technology in GE's China Technology Center at Shanghai.

He emphasized the importance of teamwork for the success of these big projects. He believes that to be a good R&D leader, one not only needs to have solid technical background and a farsighted vision of the project, but also needs superb interpersonal skills, communicational skills (especially listening skill) and skills to motivate the team to think, discuss and generate more creative ideas. His experience is to lead instead of commend, always try to build a win-win relationship with the team members, and be fair.

Dr. Liu has more than 30 publications and numerous patents filed over the years. In addition to his industrial R&D job, he is also a reviewer/editor of many different scientific journals such as Industrial and Engineering Chemistry Research, Journal of Catalysis, International Journal of Hydrogen Energy, etc. He chaired all three sessions of Fuel Processing Technologies for Fuel Cells in the 1st, 2nd and 3rd Fuel Cell Topical Conference. He was also selected to be the Chair for the 3rd and 4th Fuel Cell Topical Conference organized by AIChE, National Fuel Cell Council and International Association of Hydrogen Energy in the 2004 AIChE Spring and Annual National Meetings. Due to his active role in this field, he was elected as a member of the editorial board of International Journal of Hydrogen Energy, the leading journal in the hydrogen energy area. Recently, John Wiley and Sons, Inc. – one of leading publishers invited Dr. Liu and signed a contract with him to write a book on “Fuel Processing” summarizing all the technologies for syngas/H₂ production and purification. Dr. Liu is frequently invited by different universities and research institutes to give technical seminars, and he also gives many presentations at different national and international technical conferences.

While being asked for advices to young Chinese folks, who are studying/working in the U.S., Dr. Liu suggested that in addition to Chinese friends, don't forget to make some real good American friends. To survive and succeed in a foreign country, it is necessary to have a good understanding of its language, people and culture. Based on his personal experience, visiting English-speaking churches is an effective approach, since Christianity is the root of western culture and church is a great place to learn real English and make good American friends. He also recommended two books for our readers: (1) How to Win Friends & Influence People (by Dale Carnegie) and (2) The Purpose Driven Life (by Rick Warren). And the most important of all, he hopes everybody has a happy and cheerful heart, since “a happy heart is the best medicine for life, and nothing is more important than to have a cheerful heart,” he said.

Features

A Chemist's Venture into Ancient Civilizations: Oracle Bones and Hieroglyphics

*Professor Kuang-Yu Chen
Rutgers University, Piscataway, NJ*

Editor Note: This article is from Prof. Chen's talk at the CACS Meeting in August 2004.

As you see from the title, my talk will not be in the realm of chemistry. At Rutgers University, I am a faculty member in the Chemistry Department teaching Physical Chemistry and Chemical Biology and doing research in the areas of chemical biology and biomedical sciences. Nonetheless, I am also an adjunct Professor of Chinese Language and Culture in Asian Study Program, which is currently offering a course entitled "Origin and Development of Chinese Writing". The course covers Shang civilization, oracle bone inscriptions, and other ancient languages such as Egyptian and Mayan hieroglyphics. Tonight, as Dr. David Chang (CACS) has requested, I will make a slight diversion and, instead of discussing about my research on chemistry, I will talk about ancient Chinese writing, specifically oracle bone inscriptions, its discovery and scholarship and the role it plays in understanding the origin of Chinese civilization and in the world of languages. Finally I offer some thoughts on the uniqueness of Chinese language and civilization and the future of Chinese writing.

Original Writing Systems

Writing exists only in a civilization, and a civilization cannot exist without writing. As language distinguishes the man from the animal, so writing distinguishes the civilized man from the barbarian. All the factors (geographic, social, economic) leading to a full civilization simultaneously created a complex condition, which could not function properly without writing. The invention of writing and of a convenient system of records on paper has had a greater influence in uplifting the human race than any other intellectual achievement in the career of man. Throughout the entire history of human civilization, only five truly independent writing systems have ever been developed. They are Sumarian (in modern Iraq), Egyptian, Mayan (in central America), Harapan (northern India), and Chinese (or Hanzi). The duration and the characteristics of these five languages are listed below. Among them only Chinese survives into the modern time. All the other four have long since been dead. However, from Egyptian and Sumarian, the proto-Canaanite inscription was developed in about 1700 BC and became the precursor of all the alphabetic writings.

Dr. Kuang-Yu Chen is Professor of Chemistry and Chemical Biology at Rutgers, the State University of New Jersey. He received his B.S. degree in Chemistry from National Taiwan University in 1967 and Ph.D. in Chemistry from Yale University in 1972. He joined Rutgers University as an Assistant Professor in 1977, promoted to full Professor in 1987 and Professor II in 1995. Dr. Chen is also an adjunct professor in the Department of East Asian Studies at Rutgers, where he teaches Shang civilization and oracle bone language. His work on oracle bone and Shang civilization has been published in the Journal of Chinese Linguistics.

Name	Period	Signs	Syllabus	Duration (years)
Sumarian	3100 to 1800 BC	600	150	1300
Egyptian	3000 to 500 BC	700	100	2500
Harapan	2300 to 1200 BC	?	?	1100
Chinese	1700 BC to present	50,000	62	>3600
Maya	200 BC to 1500 AD	500	50	1300

San Dai of the Ancient China

The three dynasties, Xia (c. -1971 to -1600), Shang (c. -1600 to -1000), and Zhou (c. -1000 to -221), are called San Dai in Chinese. San Dai roughly covers a period of 2000 years in Chinese history and represents the formative stage of Chinese civilization. Although Xia and Shang were mentioned frequently in ancient texts including all Confucian canons, bamboo Annals, and Historical Record of Si Maqian, the lack of archaeological and coeval documentary evidence until the beginning of the last century has led to some uncertainty of their true existence. The discovery of oracle bones in Shang ruins has changed this picture. With the inscriptions on the animal bones and turtle shells, the more than 150,000 pieces of these bones and shells form the largest collection of Royal documents of Shang Dynasty are the rich source of raw data for studying the politics, society and life of Chinese people four thousand years ago. It is really a moving experience to see the names of the ancient kings and generals (in Shang Dynasty) inscribed on these bones and the signatures of the inscribers. In a sense, these inscribed bones and shells represent the calligraphic art work dated more than 3000 years ago.

Discovery of Oracle Bones

In the Historical Record, Si Maqian wrote, “From the time that PanGeng moved the Yin capital (to Xiaotun) to the time King Zhou perished (end of Shang Dynasty), for 273 years the capital was never moved again.” It was in Xiatus that all the oracle bones and shells were excavated. The credit of discovery of oracle bone inscription was given to Wang, Yi-Rong (President of Peking University, committed suicide in 1900 during the Boxer Rebellion Incidence) in 1898. Wang first obtained a small amount of these bones and shells from antique salesmen. Although many inscriptions on the bones looked like pictures, Wang and his friend, Liu E (1857-1909), were able to recognize words such as Zhu Ji and Zhu Xin and quickly became certain that these inscriptions belonged to the Yin people. They identified the oracle bones as Shang artifacts. This is truly an incredible finding. Wang’s untimely death left Liu the burden to collect and compile these oracle bone inscriptions, and Liu published the first collection of oracle bone inscriptions entitled “Tie Yun Cang Gui (Oracle Bone Collection of Tie Yun)” in 1903. By the way, Liu was also a famous patriot and novelist. His book, *Lao Can You Ji, Travel Log of Old Can*, is considered one of the greatest novels at the end of Qing Dynasty. The oracle bones and shells are mostly related to Shang pyromantic theology of the Shang royal court, which was characterized by (1) the use of turtle shell and cattle scapulas (骨卜與龜卜), (2) the special processing of bones and shells for producing omen cracks, and (3) the incision of the divination records, hence oracle-bone writings. The following shows the picture of two oracle bones, with word-to-word transliteration.



The Scholarship of Jia Gu Xue (Study of Oracle Bones)

Four major scholars, Lo Zhengyu, Wang Guowei, Dong Zuobin, and Guo Moruo are considered to be founding fathers of the discipline of oracle bone research. Their contributions are listed as follows:

Lo, Zheng-Yu (Xue-Tang, 1866-1940): (1) identified Xiao-tun, Henan as the site where all oracle bones were excavated; (2) collected and published a large number of oracle bone inscriptions; (3) identified the names of many Shang Kings from oracle bone inscriptions; and (4) deciphered more than 400 characters and proposed an effective method of deciphering.

Wang, Guo-Wei (Guan-Tang, 1878-1927): (1) deciphered many important key characters; (2) published a number of ground breaking papers and books on the Shang king list, Shang geography, and Shang rituals; and (3) was the first to piece together broken oracle bones.

Dong Zuo-Bin (Yen-Tang, 1895-1963): (1) directed 15 times of major Shang archeological excavation between 1928 and 1937; (2) discovered the names of diviners and proposed the use of the names of diviners to do oracle bones dating; and (3) reconstructed the Shang calendar and proposed detailed Shang sacrificial ritual cycles.

Guo Mo-Ruo (Ding-Tang, 1891-1978): (1) pioneered social anthropological studies of Shang using oracle bone documents and published 15 ground breaking books within 14 years while being a political refugee in Japan; (2) initiated geographic and mythological studies using oracle bone data; (3) made important epigraphical findings; and (4) initiated and directed the compilation of multi-volumes “Jia Gu Wen He Ji” (Collections of Oracle Bone Inscriptions).

The scientific excavation of Yin Xu, the last capital of Shang Dynasty, started in 1928 and ended in 1937 due to Sino-Japanese War. In 15 excavations during this time, over 30,000 pieces of oracle bones and shells were recovered. Archaeological excavation resumed after 1950.

Six Principles and Development of Chinese Writing

The oracle-bone inscriptions are the earliest body of writing we possess for East Asia. They were written in a script (Shang-dynasty script) that was ancestral to all subsequent forms of Chinese writing. The degree of maturity of this truly archaic writing (1600 to 1100 BC) indicates that even earlier writing in China dated before 1600 BC remains to be discovered. Another amazing fact about oracle bone inscriptions is that they are closely related to the so-called Bronze writing (1300 to 700 BC). It refers to the formal script engraved in Shang and Zhou bronze vessels. Their styles were somewhere between oracle-bone writing and Da-zhuan (500-200 BC). Da-zhuan literally means “greater seal”, which underwent another stylistic change and became Xiao-zhuan (200 BC to present). The development of the Xiao-zhuan style of writing was attributed to Li Si, the famous and controversial prime minister of Qin Dynasty. It literally means “lesser seal”. This style writing was used all the way to Han and later dynasties. Together with Xiao-zhuan, another style called Li-shu (200 BC to present), literally “clerkly script” or script by people of lower status, became popular after the Qin dynasty. Li-shu is essentially the same as modern Chinese characters.

Six Principles of Word Construction

Chinese is the only language in the world that is not alphabetic. The construction of Chinese characters rely on so called Liu-shu or six principles of word construction. They are: Xiang-xing (mimic the shape, pictographs), Zhi-shi (pointing to situations, simple ideographic words, indirect symbols), Hui-yi (meeting ideas, compound ideographic words whose meaning is the function of their parts and associative compounds), Zhuan-zhu (transferable meaning, mutually interpretative symbols), Jia-jie (borrowing, phonetic loan character (rebus writing)), and Xing-sheng (semantic-phonetic compound characters which consist of a radical part which indicates meaning and a phonetic part which indicates sound, combination of sound and pictograph, determinative phonetics).

Based on the Li-shu principle, I have written a paper arguing that the earliest Chinese writing originated at the time about 3000 BC.

The Longevity and Continuity of Chinese Writing and Chinese Civilization

Chinese writing (or Chinese language) is truly unique among all the languages in the world in the following ways:

- (1) It is the only written language in human history that has been continuously used for over at least 4000 years without any disruption.
- (2) It is the only of the original Five languages that survives into the modern time.
- (3) It is the only of the original Five languages that did not need decipherment.
- (4) It is the only language in the world that is non-alphabetical.
- (5) It is the only written language that retains the three major components of writings, namely, morphology, sound, and meaning.
- (6) It is the language that has been used by the largest number of people in the world throughout the human history.

The longevity and continuity of Chinese Hanzi forms the basis of the theory proposed by late Professor Chang Kuang-chih that Chinese civilization is unique in its continuity, as in contrast to Western civilization

The Future of Chinese Writing and Chinese Language

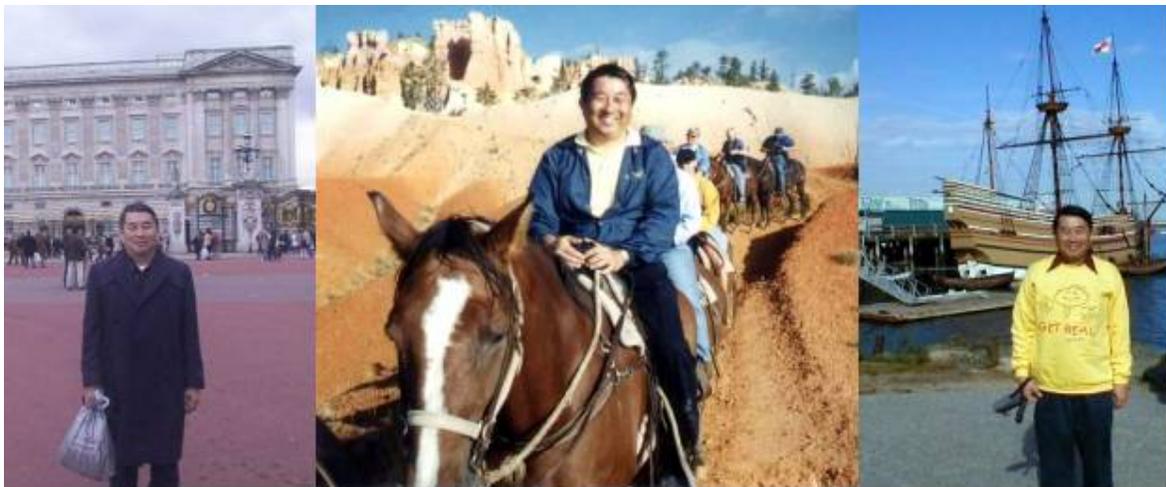
Finally I offer some of my thoughts on Chinese language, particularly its future. I think,

- (1) We need to continue the archaeological search of the earlier writings from Xia Dynasty or earlier time in order to fully understand the beginning and the development of Chinese writing.
- (2) We need to standardize the Chinese characters in order to accomplish the digitization of all Chinese publications and establish the worldwide Chinese literature database.
- (3) We need to develop novel methodologies to facilitate the learning of Chinese language for non-Chinese worldwide in order to internationalize the Chinese language.
- (4) We need to do more research to facilitate the use of Chinese in scientific writing.

Continued from page 9 **Professor Jeffery Hsieh**

Taking off the suit and tie, when he's not Prof. Hsieh, but only the "Jeff" as a friend, a neighbor and a family man, he describes himself as a "smiley, friendly person and a good listener". "Just trying to convince others to believe your point of view will not get you too far in your career. To listen more in your communication to others, you can position yourself better to deal with the issues from other side." he said.

He kept himself extremely busy even in his spare time. When asked about hobbies, he had a long list: car mechanics, remodeling of house, hunting, deep sea fishing, hiking (on 14,000 ft mountains in Colorado), reading, listening to classical music (especially Tchaikovsky's), playing drums, hand glide flying, ... and of course, traveling. His albums recorded his footsteps around the world, and on every single picture, you can see his great, million-dollar smile. The personal life of our paper expert is not "plain"; it is full of color, "pattern" and fun. Keep on smiling Jeff, and keep on using your power of passion!



Career Decisions in American Industrial R&D Organizations

*Dr. Cliff Spiro
Cabot Microelectronics Corporation
Aurora, IL 60504*

***Editor Note:** At the 2004 GLCACCS Annual Conference, Dr. Cliff Spiro, VP for R & D of Cabot Microelectronics Corporation gave a presentation on career development in industrial organization. This presentation attracted a lot of interest and attention, many audiences asked for a copy of the presentation. We asked Dr. Spiro for permission to publish his presentation in CACS Newsletter as we believe that it should be of interest to CACS members, and he graciously agreed. Here we converted his PowerPoint presentation into Word format.*

Abstract: There are many career paths that are open to individuals with scientific/technical credentials. Most commonly, we tend to stay in our field of expertise, enjoying recognition, status, and rewards associated with great scientific depth and achievement. However there are alternatives including pursuing careers that encompass scientific breadth rather than depth, as well as management careers in R&D, engineering, and business. Technical experts may even find themselves in government, politics, and even entertainment! We will explore the opportunities and choices that technical individuals make and the necessary skills and talents to be developed.

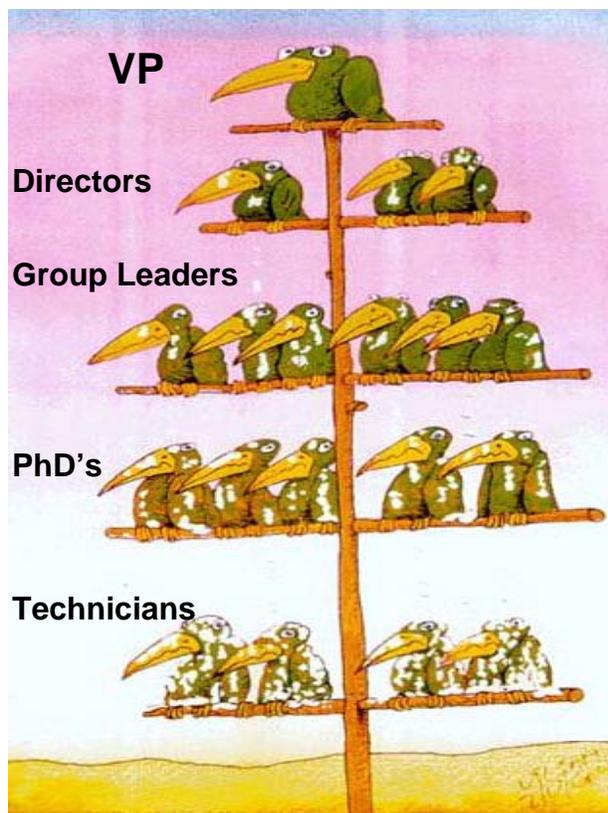
Do you run your career or does your career run you?

Is this the modern industrial R&D organization?

NO!

What are your future opportunities?

Dr. Cliff Spiro received a B.S. degree in Chemistry from Stanford University in 1976 and a Ph.D. degree in Chemistry from Caltech in 1980. He held a series of progressively responsible research and management positions for GE between 1980 and 2001 before being named VP of R&D for the Nalco subsidiary of Suez Corporation in 2001. Dr. Spiro joined Cabot Microelectronics in December 2003 as Vice President of R&D. He served on the Board of Directors of the Maxdem Corporation, and is currently a Director on the Board of the Mississippi Polymer Technologies Corporation. He holds 17 U.S. Patents and has over 75 scientific publications.



SEVERAL CHOICES!

Many famous people started out in technology.

Some excellent CEOs:

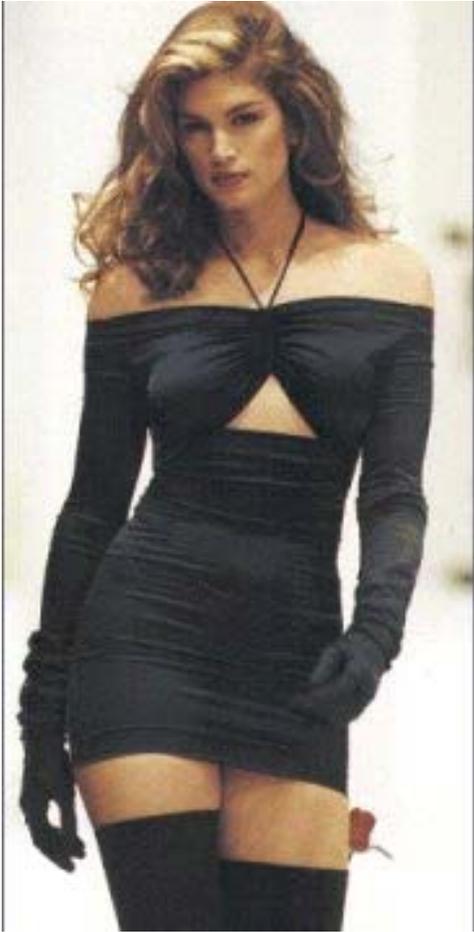
- Jack Welch, GE
- Robert Goizueta, Coke
- Lee Iacocca, Chrysler
- Andy Grove, Intel
- Phil Condit, Boeing
- Henry Ford, Ford

Several not so good politicians:

- Yasser Arafat, Jimmy Carter
- Herbert Hoover, Margaret Thatcher
- Leonid Brezhnev, John Sununu

And my personal favorite:

- Cindy Crawford
(Chemist from Northwestern)



Career Paths for R&D Employees

Career Technologist

Generalist vs. Specialist

Which are you?

<u>Specialist</u>	<u>Generalist</u>
Deep Understanding of Narrow Area Focused Effort Highly Respected By Scientific Community Sought After By Others Mentor and Teacher Role	Broad Knowledge in Many Areas No Single Focus or Expertise Emphasis on Multidisciplinary Projects Highly Adaptable and Quick-Learning

Advantages and Disadvantages

	<u>Specialist (Fellow, Senior Scientist)</u>	<u>Generalist</u>
Advantages	Strong Bias for Expertise and Focus Great Satisfaction, Recognition in Being the Expert You Get to Know Everybody in the Field Well Pretty Good Compensation Job Security Depends on Company and Industry Demands	Always Learning New Things Gaining New Colleagues Able to Work on Broad Multidisciplinary Projects Never Obsolete, Bored or Stuck Job Security Depends on Your Adaptability and Change Orientation Easier to Move Into New Companies, Management, Cross Functional Jobs

Disadvantages	Takes a Long Time To Become an Expert Lots of Hard Work Learning Curve Can Slow Down Maybe You Get Bored Limited Career Mobility	Never Truly the Expert – Always the Newcomer Not Much Recognition by Scientific Community Big Changes Are Scary, Risky You Need to Leave Areas Where You Have Expertise You Never Get to Know Everybody In Your Field Well
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Questions to Ask Yourself:

- *Is my field interesting enough to last me a lifetime?*
- *Is my field important enough to my company or society?*
- *Do I prefer deep understanding or broad understanding?*
- *Am I confident enough to make big, bold, risky moves?*
- *Does my company offer me growth opportunities?*
- *Which is more important to me – growth or security?*
- *How do I feel about recognition, rewards, prizes, prestige?*
- *Am I smart enough to learn new things quickly?*
- *Am I easily bored?*
- *Do I have good communication skills – listening and speaking?*

There is no right answer – It depends on you.

The Most Important Lessons for Career Researchers, Technologists, Engineers

- Find something you enjoy – You will be successful if you love your work.
- Gravitate to projects with the biggest impact – You will get recognized and rewarded more if successful.
- Find a company you respect and a good boss.
- Know when it is time to move on – When you have stopped growing.

R&D Management

Why Go into Management?

- More Money?
- More Prestige?
- Like to be a Decision Maker? Strategy?
- Like to Coach and Train and Grow People?
- Stepping Stone to Bigger Jobs – GM, CEO?
- Tired of Research? Think it is Easier Than Research?
- Position or Job?

Old Style: Manager as the Expert, Directive

New Style: Manager as the Generalist Who Works For the Employees

Skills, Talents, Credentials for the Successful R&D Manager:

- Strong Technical Background
- Technical Credibility and Real Accomplishments in Some Field
- Business Acumen – Finance, Sales, Marketing, IP
- Must Like People, Extrovert, Warm, Friendly, Optimistic
- Good Communication Skills – Persuasive, Inspirational, Public
- Tough and Soft Personality at the Same Time
- Fair and Honest and Open
- Decisive

How to Break into R&D Management: *Get Noticed*

- Tell Someone, Everyone That You Want to Go into Management
- Study Business, Leadership – Learn the Concepts and Vocabulary
- Learn How to Listen
- Find a Mentor and Sponsor
- Make Lots of Cross-Functional Friends
- Do More Than Expected
- Volunteer for *ad hoc* Leadership Roles
- Step up to Informal Leadership Activities – Projects For Example
- Take on Non-Technical Leadership Assignments
 - Charitable Events
 - Community or Education Roles
 - Coordinate Customer Visits
- Industry Symposia
- Professional Society
- Write Articles for Trade Press
- Practice Public Speaking – Toastmasters

How to Move up in Management – Some Tips

- Work Hard, Work Smart, Set a Great Example
- Take on Tough, Risky Assignments and Succeed
- Make an Impact
- Make Your Boss Look Good and Get Him/Her Promoted
- Blend – Strategic Thinking and Tactical Execution
- Build Winning Teams – Let Them Carry You to the Top
- Identify and Develop Your Replacements
- Promote Your Best People
- Build Strong Cross-Functional Relationships
- Take on Cross Functional Assignments
- Take on Global Assignments
- Always Be Positive, Optimistic, Enthusiastic

The Executive Job Changing System

Process is dominated by a few major retained search firms:

Spencer Stuart
Heidrick and Struggles
Russell Reynolds
Korn- Ferry
Christian and Timbers

Never Solicit Retained Search Firms – They Will Find You.

Never Turn Away Their Calls, Even If You Are Not Interested.

Read: www.careerjournal.com, “Stalking the Headhunter” by John Tarrant, and “Rites of Passage at \$100,000 to \$1,000,000” by John Lucht.

Summary

You Can Direct Your Career for Maximum Satisfaction:
Career R&D or Other?
Generalist or Specialist?
Management – Why to Become a Manager
Management – Skills, Talents, Interests
Management – How to Break in, Move up
The Executive Job Changing System

You Are Smart, Hard-Working, Courageous – You Can Do Anything You Want.

From Industry to Academia

Professor Jeffery Hsieh
School of Chemical Engineering, Georgia Institute of Technology, Atlanta, GA 30332

Abstract

(Keynote Speech at the CACS Meeting at the AIChE 2005 Spring National Meeting in Atlanta)

After we have earned our degrees, we are all facing the choice of either an industrial or academic career. There is no wrong or right choice by pursuing either industrial or academic career, which is entirely based on personal interests. Many of us are staying one career until retirement and that is probably the best. However the problems come when one is facing the change from industrial to academic career just as the speaker faced when he made the change. The discussion will mention many encounters the speaker personally experienced during this transition, such as working habit, reporting adjustment, performance evaluation, meeting presentation and confidentiality. Writing proposals with successful funding is the most difficult challenge to those who have got used to spend industrial funding. Networking with colleagues with similar interests is essential in securing and increasing the chances of being funded. Approaches to secure government and industrial funding are quite different. The execution of using different funds is also very different. The correct mental and physical accommodation in this difficult transition process is a must to build a successful new career.

Announcements

China/USA/Japan Joint Chemical Engineering Conference

China/USA/Japan Joint Chemical Engineering Conference will take place on October 11-13, 2005 in Beijing, China. It is sponsored jointly by the Chemical Industry and Engineering Society of China, the American Institute of Chemical Engineers, and the Society of Chemical Engineers, Japan. This conference is a combination of the 4th China/USA Joint Chemical Engineering Conference and the Third China/Japan Joint Chemical Engineering Symposium. The Conference will provide a wonderful opportunity for the professionals in chemical engineering and chemistry to meet together in Beijing to exchange their scientific views and research results. The theme of the conference is Chemical Engineering in Sustainable Development and High Technology. Contributions in the following topical areas are welcome:

1. Sustainable Technologies and Green Processing
 - Green processing and zero-emission production
 - Sound material recycle technology
2. Production of Clean Fuels
 - Chemical engineering in production of clean fuels
3. Hydrogen Production and Economy
 - Hydrogen production and fuel cell utilization
4. Chemical Engineering in Materials Technology
5. Chemical Engineering for Nanotechnology Development and Utilization
6. Food, Pharmaceutical and Biotechnology
7. Separation Science and Technology
8. Catalysis and Reaction Engineering
9. Computing and Molecular Simulation Science and Engineering
10. Water and Waste Water Treatment and Reuse
11. Chemical Engineering in Microelectronic Processing
12. Six Sigma and Global Quality Management
13. Panel Discussion: Shaping the Future of Chemical and Petroleum Industries in China

There will be a three full day scientific program including plenary lectures, oral presentation, and poster sessions. Papers should be suitable for a 25 minutes oral presentation. Please submit abstract of no more than 500 words in English to the following Email address by **May 15, 2005**. Please indicate in which session (oral or poster) you intend to participate.

Dr. Norman N. Li, U.S. Conference Co-Chair

NL Chemical Technology, Inc.
479 Business Center Drive, Suite 100
Mt. Prospect, Illinois 60056, USA
Phone: 847-824-2888
Fax: 847-824-2898
Email: NLChem@aol.com

*Great Lakes Chinese American Chemical Society (GLCACS)
Ninth Annual Conference*

Shaping the Future

*Saturday, June 11, 2005
9:30 ~ 17:30*

AP52 Conference Center, Abbott Park East
Abbott Laboratories, 200 Abbott Park Road
Abbott Park, IL 60064

The 9th Annual Conference of the Great Lake Chinese American Chemical Society will be held at Abbott Laboratories on Saturday, June 11, 2005. Centered around the theme of “Shaping the Future”, the meeting will include two technical sessions, a student poster session, and a job fair. Following the tradition of GLCACS annual conference, the technical sessions will include presentations given by distinguished scholars and professionals (Invited only) from both academia and industry to address significant advances and critical issues that will likely shape the future in the fields of chemistry and chemical engineering. In addition, the technical sessions will also include a presentation on career development given by a senior HR staff from industry.

Considering the significant shift of the GLCACS’ member demographics in recent years, this year’s conference puts special emphasis on the needs and interests of young members, primarily Ph.D. students and post-docs. For the first time there will be a student poster session that provides a platform for the students to present their work and themselves, which we believe is very important for their future career. Such a poster session will facilitate the networking between young students and established professionals and provide an effective and efficient mentoring environment. In conjunction with the student poster session, GLCACS will sponsor a student poster contest with cash prizes. Major local companies will be invited to present the career opportunities in the job fair.

In the following please find the tentative conference schedule. Please visit GLCACS website at www.glcacs.org or contact Conference Secretary Ms. Wenjin (Diana) Liu (wliu@northwestern.edu) for the latest update.

Tentative Schedule

9:30~10:00 Registration
10:00~10:15 Welcome
10:15~12:00 Technical Session I
12:00~14:30 Lunch, Student Poster Session and Job Fair
14:30~17:00 Technical Session II
17:00~17:30 Student Poster Award and Closing Remarks
18:00 Dinner Banquet at Yan’s Hunan Inn in Lakehurst

Student Poster Competition

*9th Annual Conference
Great Lakes Chinese American Chemical Society*

*June 11, 2005
9:30 am to 5:30 pm
AP52 Conference Center, Abbott Park East
Abbott Laboratories, 200 Abbott Park Road
Abbott Park, IL 60064*

The Great Lakes Chinese American Chemical Society (www.glcacs.org) will sponsor its first student poster competition during its 9th annual conference. The competition is open to all Chinese-American undergraduates, graduate students and post-docs. Non-Chinese participants are welcome, but will not be eligible for awards. There is no registration fee required for students and post-docs. Lunch will be provided.

This is a great opportunity to present your work in a friendly environment, to practice your presentation skills, and to network with friends and colleagues in the Great Lakes region, from both industry and academia. More importantly, you may wish to explore job possibilities in our job fair, which is part of the conference. We hope to see you there.

Logistics:

- (1) Please fill the poster application form (form available at GLCACS website www.glcacs.org). Submit the form by March 18 and an extended abstract (not to exceed two pages) by April 22 to Ming Ni at niming@iit.edu, or Jin Shu at jinshu79@hotmail.com. Participants will be notified of the acceptance by May 13.
- (2) The lead author of each poster will make a two-minute oral presentation during the morning session. A PC and LCD projector will be available.
- (3) The poster session will be from 12:00 to 2:30 pm. Easels, white boards and pins will be provided.
- (4) Awards will be announced at the conclusion of the conference:

First Prize	\$300
Second Prize	\$200
Third Prize	\$100

CHINESE AMERICAN CHEMICAL SOCIETY MEMBERSHIP FORM

_____New Application _____Renewal _____Information Update

1. Name _____ Chinese name _____
2. Affiliation/Title _____
3. Mailing Address _____
4. Telephone Work () _____ Home () _____
5. Email Work _____ Home _____
6. Fax Work _____ Home _____
7. Degree _____ Field _____ School _____

8. Current Job Function

- | | |
|-----------------------------|----------------------------|
| _____ Academia | _____ Industrial R&D |
| _____ Consulting | _____ Sales/Marketing |
| _____ Manufacturing | _____ Management |
| _____ Engineering/Design | _____ Computer Application |
| _____ Other (specify) _____ | |

9. Please indicate your interests in the following committees

- | | |
|-------------------------------------|----------------------------|
| _____ Membership Committee | _____ Newsletter Committee |
| _____ Website Committee | _____ Program Committee |
| _____ Public Relationship Committee | |

10. Recommended by: _____ (optional)

I hereby apply for membership to the CACS as a

- _____ Regular Member (\$20/year)
_____ Student Member (\$10/year)
_____ Special Member (\$100/year)
_____ Life Member (\$200 in one payment)
_____ Corporate Member (\$500/year)

Additional Contributions: \$_____ (Tax Deductible)

Please make check payable to CACS or Chinese American Chemical Society and mail to:
Chu-An Chang, CACS Treasurer, 21 Jerome Avenue, Piedmont, CA 94611

Date _____ Signature _____

Forthcoming CACS Activities

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

229th ACS National Meeting San Diego, CA Monday, March 14, 2005

Social Hour	5:00 – 6:00 PM	Open to all ACS Attendees Wyndham Emerald Plaza
Banquet and Keynote Speech	7:00 – 9:30 PM	Jasmine Seafood Restaurant 4609 Convoy Street, San Diego, CA Tickets at ACS Registration, \$25/Person Ticket No. SE-10

**Keynote Speaker: Dr. Phoebe K. Dea
Fletcher Jones Professor of Chemistry
Associate Dean of the College
Occidental College, Los Angeles**

Beyond the Lily Pond: An Endeavor

AIChE 2005 Spring National Meeting Atlanta, GA Monday, April 11, 2005

Social and Keynote Speech	6:00 - 7:15 PM	Open to all ACS Attendees
Dinner Banquet	7:30 - 9:00 PM	Hsu's Gourmet (walking distance from Hyatt) 192 Peachtree Center Ave., Atlanta, GA Tel: 404-659-2788 Tickets at AIChE Registration, \$30/Person

**Keynote Lecture: Dr. Jeffery Hsieh
Professor, School of Chemical Engineering
Georgia Institute of Technology, Atlanta**

From Industry to Academia

(See p. 21 for an abstract of the presentation)