Message from the Chair

Dear Alumni and Friends,

This is my first message as Chair of our ChBE Department, and I am not sure what to write about.

I could write about how our degree programs are more popular than ever. 51 students graduated with BSCHE degrees (a 50% increase from 3 years earlier). 11 graduate students earned PhD degrees in 2013-2014 (3rd largest class among the 13 PhD programs in the School of Engineering). There are around 90 students taking sophomore-level ChBE 301 “Chemical Engineering Fundamentals”. There are more than 10 MCHBE students and more than 20 PhD students this Fall, the largest numbers that I've seen in over a decade. There are 17 post-doctoral researchers in ChBE, highest among the Engineering Departments.

I could write about the many changes to the undergraduate courses we started this Fall, to meet head-on the challenge of improving the educational experience while accommodating all the interest in chemical engineering. Several core courses have been divided into two sections, so that each section is taught by a faculty member. There is a new focus area called “energy and sustainability engineering”. MECH211 is no longer required. There is a new undergraduate course on process safety (ChBE 350).”

I could write about our “home” building, Abercrombie Engineering Laboratory, undergoing much needed renovations on the second floor… much needed because of flooding (from a water pipe that burst in the middle of a warm, July night). I could write about the latest achievements of our faculty this year. Ramon Gonzalez is the new Director of EEI, the Energy and Environment Initiative at Rice. Walter Chapman is new Associate Dean for Energy Research. Matteo Pasquali is the new Chair of the Chemistry Department. George Hirasaki received the 2014 Distinguished Alumni Award from the Association of Rice Alumni. Laura Segatori was promoted to Associate Professor with tenure. Rafael Verdugo received a prestigious CAREER Award from the National Science Foundation. Tony Mikos was elected an AIChE Fellow just last month. … or maybe I could wait one full year before I write my first message, after I get the hang of being Department Chair. Until then!

Michael Wong
Professor and Department Chair

Support the ChBE Department

You can make a tax-deductible donation to our department at giving.rice.edu.

Here are some suggestions for department initiatives that can be supported by your gift:

Undergraduate Support
Lab Equipment and Repairs  (Please list fund number G81612/715000 in the special instructions box)

Paid internships within ChBE  (Please list fund number G81613/715000 in the special instructions box)

Graduate Recruiting  (Please list fund number G81430/715000 in the special instructions box)

Faculty Support  (Please indicate fund number G82873/715000 in the special instructions box)

General Support  (Please indicate fund number G80609/715000 in the special instructions box)

Feel free to contact our Department Chair, Michael Wong (mswong@rice.edu), for additional opportunities.

Our faculty, staff, and students thank you for the continued support!
This past spring, the 2014 Rice ChBE Senior Design groups were tasked with designing a mobile waste or non-food crop to energy-product processing facility. For BloomNG (recent 2014 graduates: Eric Bastoul, Corey Haas, Jim Howe, Chengpeng Huang, Alex Reis, and Alexandra Zambrano) this project provided a tangible opportunity to exercise newfound design abilities. Harmful algal blooms (HABs) have become a devastating reality in a number of regions around the world, including in our ultimate focus, the Chinese coastal marine ecosystem. These blankets of invasive algae species can span thousands of square miles in explosions of growth with the capacity to block out sunlight and deplete oxygen in the water, resulting in death of aquatic species. Not only are the ecosystems at risk, the Chinese economy has also seen a huge hit from a drop in tourism due to unsightly blooms.

Ulva lactuca, a species of macroalgae representative of the algal blooms in the region, demonstrated to be an ideal candidate as a feedstock for our mobile plant.

Beyond solving an environmental issue, our facility produced renewable natural gas (also known as sustainable natural gas or Bio-SNG), an ideal product to sell to China, the most immediate and likely buyer. China is currently one of the world’s largest energy consumers, accounting for half of all global consumption (US EIA, 2014). The Chinese government is looking to double the natural gas (NG) contribution to its energy profile by 2015 to meet residential power needs while decreasing reliance on coal. These forces push an increase in Chinese demand for NG, making this an ideal niche to implement our process.

In the design proposal, the marine macroalgae is pretreated through two steps to break down the indigestible macroalgae to enhance yield in the fermenter. We employed a novel pretreatment technology developed by Bruce Dale’s group at Michigan State University, followed by enzymatic hydrolysis and an anaerobic digester where methanogens produce methane gas. This fermentation process is very similar to that of classic ethanol fermentation by yeast for alcohol and beer! The biogas flows out of the top of the digester and is sent downstream to be upgraded to Bio-SNG via Iron Oxide scrubbing and CO₂ separation membrane technology.

Our team pitched a “barge” concept (setting up the plant on a barge) that would allow the mobile plant to maneuver on the water to easily access the HAB infested areas.

Although the concept was just a fun idea tossed around during the design process, we had a number of judges and other interested persons applaud the idea, some even asking how far we had gone with collaborating with the Chinese government to make this a project a reality. The final design was estimated to clean up around 1.25 tons algae/day while achieving a maximum daily production rate of about 5 SCF of Bio-SNG. The amount produced is laughable by industrial standards, where companies are producing orders of magnitude more natural gas by the minute; although BloomNG’s design was not economically profitable, this mobile plant, or a fleet of barges, could be something the Chinese government would invest in to clean up the HABs while producing a useful product. This proves to be a better alternative than current clean-up methods which include sending the biomass off to be burned or fed to livestock.

Our team was honored and pleasantly surprised to be awarded the Best Energy-Related Engineering Design Award at the 2014 Brown School of Engineering Design Showcase and Poster Competition. Dr. Kenneth Cox and Professor Rick Strait provided generous guidance to our group and all the other incredible projects from our class. Their work with the students is unquantifiable and individual project recognition is merely a reflection on the high level of teaching that goes on in the ChBE senior design courses.

Alex Reis, a Rice Class of 2014 alumnus, is currently in the department of Chemical Engineering at Pennsylvania State University where he is seeking his Ph.D. through studying and advancing the field of Synthetic Biology. Feel free to contact him with questions regarding BloomNG’s mobile Macroalgae to Bio-SNG facility or regarding topics such as synthetic biology, metabolic engineering, and renewable energy technologies at alex.reis@psu.edu.
The Professional Excellence Award

The Chemical and Biomolecular Engineering Alumni Committee has established the Professional Excellence Award to honor one faculty member every two years who has made an outstanding contribution to the education of undergraduate and/or graduate students.

The alumni committee founded this bi-annual award in 2012. The recipient is presented with a plaque as recognition for his or her outstanding contributions. To be eligible, the individual must have served at least 4 years in the Chemical and Biomolecular Engineering Department of Rice University. At the time of nomination, he or she must be living, but does not have to be an active faculty member. Once someone wins the award, he or she is not eligible to receive the award again for the next 5 years. Any alumni of the Chemical and Biomolecular Engineering Department or active student who has been at Rice for more than 2 years may provide the nomination.

The first bi-annual Professional Excellence Award was presented to Dr. Walter G. Chapman, William W. Akers Professor in Chemical Engineering and Associate Dean for Energy Research at the Centennial Alumni Mixer held on October 11, 2012.

For the 2014 Professional Excellence Award, a number of nominations were received and 6 outstanding faculty members have been shortlisted based on nomination letters submitted by their former or current students. Please go to the online poll at ow.ly/CVCw9 to cast your vote! The winner will be announced in the fall.

ChBE Student Poster Competition Showcases Department Research in Energy, Nanotechnology and Biosystems

By Gautam Kini

On March 27, 2014, graduate and undergraduate students of Rice University’s Chemical and Biomolecular Engineering (ChBE) department enthusiastically participated in a student poster competition. This event was conceived by the ChBE alumni advisory board for students to present their research and design projects to an audience from industry and academia.

The event succeeded the 2014 Chevron Lecture on Energy at Duncan Hall, where 18 graduate and 3 undergraduate students presented synopses of their research and design projects around the ChBE department’s themes of Energy, Nanotechnology and Biosystems. The posters were adjudicated by a panel comprising of industry and faculty representatives - David van Kleck and Patrick Malone (Shell), Ron Smoller (KBR), Rap Dawson (retired Exxon), George Bennett (Professor, department of Biochemistry and Cell Biology, Rice University), and Kai Yu San (Professor, departments of Bioengineering and Chemical and Biomolecular Engineering, Rice University). Students were given a maximum of ten minutes to present their poster and evaluations were made by the judges around poster presentation, content and organization. Students also had time to informally discuss their posters with a wider audience of alumni, department faculty and fellow students.

In a keenly contested event, the first prize with a certificate and cash award of $500 was awarded to graduate student Dmitri Tsentalovich (Pasquali group) for his poster on “Ultra Strong and Conductive, Lightweight Carbon Nanotube Fibers.” The second place prize with a certificate and cash award of $300 was secured by undergraduate students Caroline Zhu and Jesse Eclarina for their poster on “The Effects of Maternal Physical Activities during Pregnancy on the Physical Activity Levels of the Offspring.” The third prize with a certificate and cash award of $200 went to graduate student Jinghui Wang (Segatori/Biswal group) for his poster on “Nanomechanical Detection of Biomolecular Interactions – A system for rapid Salmonella detection using peptides.” The cash prizes for the event were sponsored by Chevron.

The sub-committee from the ChBE alumni advisory board that contributed to organizing this event comprised of Charlie Meyer, Gautam Kini, Jenny An, Ron Smoller (all alumni), Prof. Walter Chapman (faculty) and Stacy Pesek (student).

Overall, the competition was a grand success and the ChBE department and alumni advisory board are considering making this an annual event.
The Riki Kobayashi Fellowship is a perpetual fellowship from an endowment established in 2005 in honor of Dr. Riki Kobayashi, a Louis Calder Professor Emeritus in Chemical Engineering at Rice University. The endowment was raised by Riki’s friends, associates, and former students who wanted to recognize Riki and the impact he had on their lives and careers. The fellowship is awarded to outstanding graduate students in the Chemical and Biomolecular Engineering department at Rice for the best PhD thesis proposals presented at the end of their second year in graduate school.

Dr. Kobayashi received his BS in Chemical Engineering from Rice University in 1944 at age 19. He then received his MSE (1947) and PhD (1951) from the University of Michigan. Dr. Kobayashi significantly impacted the fields of thermodynamics and transport as an AIChE affiliate and was touted as “one of the century's most prolific researchers”. He was awarded with the first Donald L. Katz award in 1985 by the Gas Processors Association. To add to his numerous accolades, Riki was the proud recipient of the Outstanding Engineering Award at Rice University in 1985, and the Albert Einstein Medal from the Russian Academy of Natural Sciences, US in 2010. Dr. Kobayashi was nominated as a fellow of the American Institute of Chemical Engineers, the American Institute of Chemists, and was elected into the National Academy of Engineering in 1995 for his notable scholarly contributions to the natural gas industry.


Riki’s legacy at Rice University is honored through the Riki Kobayashi Graduate Fellowship in Chemical Engineering. Please join us in congratulating this year’s recipient.

Contributions in memory of Riki Kobayashi may be made to:

Chemical Engineering
Rice University
6100 Main Street, MS-362
Houston, TX 77005-1827
George Jiro Hirasaki

Two former students narrate the excellence and charisma of their graduate advisor, Dr. George Hirasaki, whose illustrious career spanning over half-a-century has impacted many Rice students and faculty alike.

By Sayantan Chatterjee and Sumedh Warudkar

An Inquisitive Teenager
He remembers one particular science teacher in 8th grade, who instead of teaching the class ‘general science’ taught them chemistry. That fueled George’s curiosity and he spent more than a few hours after class, asking questions, reading advanced textbooks and doing interesting experiments.

Seeing is Believing
Back in the 1950s, procuring commonplace lab chemicals was much easier than it is today. George had fun synthesizing chemicals and replicating reactions he’d read about in chemistry textbooks. By the time George returned from his service in the Marine reserves, he had all but decided what he was going to do with his life – was chemical engineering. Hirasaki graduated from Vidor High School in 1958, received a chemical engineering degree in 1963 from Lamar University and joined the graduate program at Rice University, thus beginning an ‘unconventional’ association that has grown stronger over half a century.

Distinguished Rice Alum
George’s decision to pursue graduate studies at Rice was influenced by another distinguished Rice faculty, the late Riki Kobayashi. George's father knew Riki's father, who lived in a Japanese American farming colony in Webster, Texas. When the time came for George to choose a graduate school, his father suggested that he go see “one of the Kobayashi boys” who taught at the Rice Institute. George met Riki, and the rest is history. Many years later, George and Riki would become research collaborators and after joining the Rice faculty; George inherited what was once the Kobayashi laboratory.

Since childhood, George was intellectually stimulated by challenging problems. As a child, he enjoyed solving puzzles and proving theorems. As a graduate student, he solved the classical Navier-Stokes equation in three dimensions and earned a PhD in Chemical Engineering in 1967. Due to his outstanding contribution to transport phenomena and numerical simulations, he was awarded with the Ralph Budd award for best engineering thesis by the George R. Brown School of Engineering. After graduating from Rice, George was offered a job as a reservoir engineer at the Shell Development Company in Houston. George continued to serve Rice, post-graduation, through teaching and as a full time faculty during and beyond his glorious Shell career. To applaud...
George Hirasaki (left top corner) with his colleagues at Shell Development Company in Houston

George’s phenomenal career as a Rice alumni and his meritorious service to the university, he was recently honored as the ‘Distinguished Alumni’ by the Association of Rice Alumni in 2014. It is recognition especially dear to his heart as George feels “Rice is his home”.

Accomplished Shell Engineer

George worked for Shell for 26 years, starting in 1968. One of his early research tasks on joining Shell was to help them advance their reservoir modeling software, something he and his team accomplished with great distinction. 1973 was a turning point for the US energy industry as the price of oil increased overnight as a result of OPEC embargo. It was under these circumstances that Shell and other companies started investigating technologies to improve hydrocarbon recovery from existing reservoirs. This field of research, called “enhanced oil recovery” attracted George, who has done pioneered in the field both at Shell and as faculty at Rice. Over the course of his career, his accomplishments at Shell earned him international recognition and highest honors from industry, government agencies and professional societies.

His technical prowess was affirmed when he was elected to the prestigious National Academy of Engineering in 1991 for his fundamental contributions to understanding interfacial phenomenon in oil recovery. George L. Stegemeier, George’s colleague at Shell and a fellow member of the National Academy of Engineers (NAE), recalls George’s signature question when reviewing technical reports: “What are your assumptions?”.

Inspiring Mentor and Advisor

While still working at Shell, George continued to pursue his passion for teaching by serving as a part-time lecturer at Rice’s Chemical Engineering department from 1977 until 1992. After an exemplary career with Shell Development and Shell Oil Company, he joined Rice’s faculty as the A.J. Hartsook Professor in Chemical Engineering in 1993. Michael M. Carroll, who served as the Dean of the George R. Brown School of Engineering at Rice during George’s appointment, reassured the Rice community that “his presence will further enhance the quality of Rice’s faculty.” Soon after his appointment, the department amplified Rice’s reputation for energy research and high-quality teaching.

Throughout his prolific career, George has dedicated himself to mentoring and coaching budding engineers in the industry and academia. At Rice, he has advised numerous undergraduate and graduate students, served as a faculty associate at Lovett College and nurtured young scientists to become independent professionals.

During his term at Rice, George established an industry consortium on processes in porous media. The consortium brings industry partners to Rice and has grown in size over the years providing financial support for research to several students and a dozen or more faculty members.

After 20 years of service at Rice, George retired last year as a tenured faculty member. As an emeritus teaching professor, he continues his stellar research on interfacial phenomenon, enhanced oil recovery processes, gas hydrates, carbon capture, transport in porous media, nuclear magnetic resonance imaging to evaluate well properties and emulsion separation. By retiring, he opened a faculty position within the department which allowed for the hiring of a new faculty member in energy research. In his emeritus position, he continues his commitment to Rice by serving as a divisional advisor, and continues to manage a large research group. Walter Chapman, William W. Akers Professor of Chemical and Biomolecular Engineering states, “His zeal for science, teaching and dedication to Rice is beyond words.”

Larger-than-life Sports Enthusiast

When asked about his hobbies outside science, George fondly describes all the fun and challenging sports he’s tried to master. He celebrated his 50th birthday by climbing Mount Matterhorn (14,692 feet). George has an eclectic interest in adventure sports - he is an avid mountain climber, passionate sailor, competitive wind surfer, and admirable skier - who not only enjoys the toughest levels of heli-skiing and powder-skiing but has won several gold medals in his age group at his ski club. George draws analogies to wind surfing or skiing as gliding like dolphins or flying like birds. For his 70th birthday, George flew a World War II T-6 Texan trainer aircraft to conquer the skies.
A Remarkable Individual

For a highly accomplished scientist, George’s life philosophy is very simple. He suggests that more people, both young and old need to have more ‘fun’. The ‘fun’ itself lies in taking up ever more challenging problems and enjoying the gift of new knowledge and experiences that arise on the journey to solving them.

Whether it’s improving oil recovery technology or mastering wind-surfing in Hawaï, George has tried to keep an open mind and has challenged himself to learn and improve.

George Hirasaki is undoubtedly one of the most remarkable researchers of this era. He has not only made a long-lasting impact through innovations and scientific discoveries, but also inspired hundreds of young minds to think rationally, act as independent scientists, and always “challenge one’s own thinking and be one’s own critic”.

Outstanding Japanese-American ambassador

In 2002, George was elected President of the Houston chapter for the Japanese American Citizen League (JACL). Among his numerous achievements, he has been instrumental in compiling archives for countless family histories in southeast Texas and organizing an event to celebrate 100 years of Japanese immigrants in Texas. Perhaps most notably, he promoted changing the names for ‘Jap Lane’ and ‘Jap Road’ in Orange and Jefferson counties, respectively. His tireless contributions to the Japanese-American community were recognized in 2009 when he was awarded the “Order of the Rising Sun” at the Japanese consulate in Houston. This award was instituted more than 100 years ago and has honored many legends including film director, Clint Eastwood and George’s own maternal grandfather, Kichimatsu Kishi who received this honor from Emperor Meiji for his military service in Manchuria during the Russo-Japanese War in 1905. George was amazed and humbled to learn that he was held in the same esteem as his legendary grandfather.

George’s wife, Darlene has been his co-pilot in this journey for more than 20 years. George acknowledges that Darlene plays a pivotal role in his life - helping him maintain a healthy work-life balance. They both love adventure and together they continue to travel the world and explore new destinations. Along the way, they have biked hundreds of miles along the coast of Japan, skied in Wyoming and gone horseback riding in Europe.
Every year, a board of professional chemical engineers selects a design developed by one of the teams from the ChBE graduating class. The design is chosen in recognition and development of superior design and outstanding innovation. From the class of 2014, team WooDME, consisting of Paul Chaguine, Wyatt Doop, Devon Rule, Eric Talbert, Taryn Willett and Menqi Yu, was awarded the prize for their design of a mobile conversion unit of woody biomass waste to dimethyl ether fuel. After hundreds of hours spent in the senior design lab of the Abercrombie building, the team couldn’t be happier to be recognized for their hard work. The key to their success, they claim, was not the individual contribution or the last minute push to meet the deadline, but a constant group effort throughout the semester. “We started holding 3-hour, bi-weekly meetings the minute the project statement was given,” says one member. “The reason we did so well was that we worked incredibly well as a team and started early by holding ourselves to a strict schedule for the duration of the project.”

Winning Design Description

Why DME?

Dimethyl ether (DME) is a cleaner substitute for liquefied petroleum gas (LPG), a high octane fuel. DME can be used for transportation, heating, cooking and other residential applications. It is also relatively nontoxic and burns more cleanly than fossil fuels.

Statement of Intent

Every year, 119 million pounds of woody waste from forestry operations are left to rot. Small-scale forestry operations, such as logging companies local to rural Alabama are the target because this design can produce a profitable fuel from what would otherwise be disposed of in non-environmentally friendly way.

Solution

The winning design is a mobile, small-scale unit, equipped to convert this isolated waste to useable liquid biofuel. By converting the waste to DME, the waste is disposed of in an environmentally sound manner, while producing a liquid fuel that can either be used on site or sold for profit. The 4-step process takes 1000 pounds per hour of loblolly pine and converts it to 50 gallons per hour of nearly chemical-grade dimethyl ether. Fully heat integrated, the system can sustain itself independent of the energy grid. Perhaps what the team is most proud of is that the design pays off the initial capital investment in just 12 years and is worth a net $3 million at the end of its 20-year projected lifespan.

Design Overview

This design consists of four modular units that convert the feed of dried woody biomass from cellulose to high-purity DME. The four main sections are (1) gasification from biomass to syngas in a dual-fluidized bed gasifier, (2) gas conditioning to purify the stream prior to reactions in a three-stage process, (3) methanol synthesis via a series of catalytic slurry-bed reactors and, (4) a reactive diving wall column (R-DWC) that combines the power of a simple distillation column with a reactive distillation column to dehydrate methanol and produce a stream of nearly chemical-grade purity DME.

The devotion to extensive research early on and attention to detail later in the game clearly paid off for these recent graduates.

Congratulations Team WooDME!
Greetings from Japan: Engineering and studying abroad from two current Rice ChBE Juniors

By Ben Wang and Lisa Chiba

NanoJapan is a program led by Junichiro Kono, a Rice professor of electrical and computer engineering and of physics and astronomy. The program brings undergraduates from American universities to Japan, where they are immersed in Japanese culture and language for three weeks before reporting to labs at universities in Japan for eight-and-a-half weeks of intense nano-based research. The program, funded by National Science Foundations (NSF) Partnerships for International Research and Education (PIRE) grant, contributes to the development of a generation of globally competent scientists and engineers.

Our experience with the NanoJapan experience this past summer was both culturally and technically intensive. For the first three weeks of the program, all the students had daily Japanese language classes in the mornings and cultural outings in the afternoons together. Students then report to labs at different universities for individual research projects. Ben Wang then moved to the University of Tokyo where he spent 8 weeks conducting research in the Department of Mechanical Engineering. He worked on the diameter-controlled growth of Single Walled Carbon Nanotubes by Alcohol Catalytic Chemical Vapor Deposition, and their applications for air-stable high-efficiency solar cells. Likewise, Lisa Chiba spent the next 8 weeks at Osaka University in the Department of Applied Physics studying deep ultraviolet imaging of fluorescent proteins in cells for multi-color imaging.

Perhaps the most important thing we learned from the program was being able to live and learn in a completely new environment which was life-changing — before joining our respective labs, we had very limited knowledge of Japanese language and culture. We had to adapt to a new environment where we had to juggle learning both difficult research topics as well as a new set of cultural norms. On top of that, we had to survive manage daily activities, like eating and getting around, without being fluent in Japanese. Even if we grew up as Asian-Americans, both of us were challenged living in this new environment. However, after a few weeks of living and working in Japan, we slowly picked up on the more subtle social norms, such as how to speak with co-workers and maintain a constant awareness for those around us.

Through this excellent program, we were able to gain research experience while also challenging our communication skills and sense of global awareness. We learned how to better communicate cross-culturally in the workplace, and how to adapt working with an international team. In addition to our cultural experience, the opportunity to conduct graduate-level research in an international setting has led us to perhaps consider pursuing international graduate study.

Rice at the AIChE National Conference

By Victoria Brooks

San Francisco around Halloween is a quirky setting. It’s probably more suited for the Hangover Part IV—or some kind of MTV show—than the 2013 National AIChE Student Conference. However, despite the odd backdrop, the lessons our AIChE team took from the conference were remarkably insightful both for club improvement and personal development.

Leadership sessions and meal times provided excellent contact for conversations around potential student chapter ideas. For example, Texas A&M hosts a sophomore retreat every year for its chemical engineering students. This attracts a great deal of attention as it familiarizes sophomores with company representatives, the relevance of their coursework to life after college, as well as other chemical engineers. While Rice AIChE has never attempted this style of retreat, we now have some idea of where to start, either for this year or somewhere down the road.

On the personal development side, I really enjoyed the discipline specific lectures such as the lecture on “Paths for Chemical Engineers in NEST (Nuclear Engineering Science and Technology)”. The speaker discussed different opportunities in this little-known (at least to undergraduates) area where chemical engineers are needed. ChemEs are involved in the design, reprocessing, day-to-day operation among many other parts of modern day nuclear technology.

To me, contact with other clubs and exploration of little known disciplines like NEST are highly beneficial aspects of the National Student Conference. So often at the undergraduate level, we narrow our focus towards a small number of career opportunities, with many engineers unaware of all the places they can go and interesting things they can accomplish.

In the future, attendance at the National Conference can help Rice AIChE widen our focus. Our chapter is looking to increase member attendance to the conference and encourage participation in competitions such as the essay contests, the ChemE car competition, and even perhaps the mobile application competition. Last year, the latter had no entries so a $500 prize went unclaimed.

Of course, it’s not all work and no play. Our team had a blast while we were there, and made time at the end of every conference day to explore Chinatown, Little Italy and the Golden Gate Bridge. I have no doubt that the 2014 conference in Atlanta this November will be just as fun and rewarding!

Join Us at The 2014 AIChE Annual Meeting Reception

The Department of Chemical and Biomolecular Engineering is hosting a reception at this year’s 2014 AIChE Reception.

Go to ow.ly/DCX8i for more information!
Cathy (Hoang) Baroang  

After Rice, Cathy spent time as an engineer at Air Liquide. She later shifted to working in public radio before returning to school and earning Masters degrees from Columbia University in Public Health and Social Work. Since 2010, Cathy has lived in Washington, D.C., and works for the U.S. Department of State as a foreign affairs officer. She is responsible for refugee and humanitarian assistance policy and programs in West Africa. She and her husband Kye are the proud parents of Francie, born May, 2014.

Ternika (Gibson) Bowden  

After Rice, Ternika returned to her home state of Connecticut where she has worked in the aerospace industry as a Materials and Process Engineer at Sikorsky Aircraft. Currently, she works as an Applications Engineer at Kamatics Corporation. She received an M.S. in Engineering from Purdue University (2008) and a M.S. in Organizational Leadership from Quinnipiac University (2012). In her free time, Ternika enjoys chasing after her son Lawrence Jr., who was born in March, 2013.

John Cliver  

After Rice, John went to work for ExxonMobil and completed an MBA at the University of Texas. He then moved to Netherland, Sewell & Associates, Inc. in 2009, where he is a VP and consulting reservoir engineer. In his free time, John likes to work inside and outside of his 100 year-old house in the Houston Heights, play piano and guitar, and cruise around the bike paths in Houston. He likes to travel to France as often as possible to visit the places he came to know as a summer intern working in Paris while at Rice.

Kat (Ward) Haight  

After Rice, Kat moved to Washington, D.C., to work for Naval Reactors (NR) and met her husband Tom Haight, shortly thereafter. At NR, her varied projects have included supporting the forward deployment of a nuclear powered aircraft carrier to Japan and developing manufacturing processes for a life-of-the-ship nuclear reactor for the next class of ballistic missile submarine. In her copious spare time, Kat raises two beautiful kids: Kara (age 3) and Mikey (age 1).

Benjamin Harper  

After Rice, Ben worked at Deloitte Consulting for 2 years before attending the Massachusetts Institute of Technology's Leaders for Global Operations Program, earning a Masters in Material Science and an MBA. After MIT, he stayed in Boston where he resides currently. He worked at another consulting company for several years, before co-founding his own firm with an old boss in 2012. He is now a Principal at Fairmont Consulting Group, and leads teams for growth strategy and M&A due diligence engagements in the aerospace, defense and government services markets. It is a small firm, so he has discovered that he is also in charge of HR, IT, Accounting, Finance and several other functions for which he is egregiously under-qualified. He has traveled extensively, including climbing Kilimanjaro in 2011 and visiting the Galapagos in June 2014, where he became engaged.

Shawn Hillen  

After Rice, Shawn joined Berwanger as a process safety consultant. A little over a year afterwards, he joined KBR and moved into an engineering IT and software development role. He then joined CB&I and has been there for over 7 years. He enjoys spending his free time going fishing down in Galveston.

Sam Jones  

After Rice, Sam completed a Ph.D. at the University of Florida and shortly thereafter, started working for Intel. He is now an engineering group leader there. Sam is married with a kiddo now living in Hillsboro, OR (near Portland).

Jason Longoria  

After Rice, Jason went to work for a software company before moving to Intel to work as a software engineer. After Intel, Jason moved to Portland, OR and went to work for HP as a software engineer. He recently moved back to Texas and is currently a software engineer at a local start-up. He enjoys spending his free time going fishing down in Galveston.

Erik Moral  

After Rice, Erik worked for Environ International as an environmental engineer. He went back to Rice to complete an MBA and now works as a management consultant with Ernst & Young, focusing on mergers and acquisitions in the energy and chemicals sectors. Erik lives in Houston (next door to the Beer Can House) and enjoys spending his free time hanging out with his wife Jackie, cycling, and scuba diving.

Shannon (Duffy) Meerscheidt  

After Rice, Shannon joined DuPont as a process engineer, supporting Ethylene Copolymers production at the Sabine River Works plant in Orange, TX. After a stint in the Production organization and a Six Sigma Black Belt role, she has returned to the Technical group as a senior engineer, where she is involved in daily operations, capital project work, and new product development. She has been married to her husband Kyle for 10 years, and they have two children, Mia (age 4) and Daniel (age 1).

Tim Perkins  

After Rice, Tim traveled across South America for a year to study birds as a Watson Fellow. He joined Chevron in 2005, where he worked as a process engineer in Richmond, CA, before moving to a rotational assignment in Kazakhstan. Last year, Tim returned to Houston and currently manages upstream capital projects in the Mid-Continent Business Unit. He enjoys spending free time with his wife, Kristy Jones ’04, and son, Benjamin (Brown ‘36?).

Crystal Ramon-Miranda  

After Rice, Crystal joined Chevron and has worked for them in various technical roles in Midland and Houston, TX. She is currently a Technical Team Leader in Chevron's Process Engineering Department. She spends her free time with her husband Eduardo Miranda, Jr (Lovett ’05) and her baby Eddie, born in November, 2013.
Sibani Lisa Biswal, Associate Professor; Ph.D. Stanford, 2004. Interactions of colloidal particles with solid and liquid media, interfacial behavior of biomolecules.

Walter G. Chapman, W.W. Akrös Professor, Associate Dean for Energy Research; Ph.D. Cornell, 1981. Thermodynamics, statistical mechanics, polymer solutions, surface- fluid interactions, molecular simulations, gas hydrates, waxes and asphaltenes.

Kenneth R. Cox, Associate Chair-Undergraduate Studies Professor in the Practice; Ph.D. Illinois, 1979. Product and process design, phase equilibria for advanced separations design.

Ramon Gonzalez, Professor in Chemical and Biomolecular Engineering, Director of The Energy and Environmental Initiative (joint appointment in Bioengineering); Ph.D. University of Chile, 2001. Metabolic engineering, functional genomics, systems biology, microbial fermentations, chemicals and fuels from renewables.

George J. Hirasaki, A.J. Hartsook Professor Emeritus of Chemical Engineering and Biomolecular Engineering; Research Professor; Ph.D. Rice, 1967. Foams and emulsions, aquifier remediation, NMR-measured transport properties of fluids and rocks, enhanced oil recovery, gas hydrates and carbon capture.

Clarence A. Miller, Louis Calder Professor Emeritus in Chemical Engineering, Research Professor; Ph.D. Minnesota, 1969. Interfacial phenomena, surfactants, foam, emulsions, aquifier remediation.

Deepak Nagrath, Assistant Professor in Chemical and Biomolecular Engineering; Ph.D. Rensselaer Polytechnic Institute, 2003. Nutritional systems biology, stem cells, cellular repair, metabolic and transcriptional networks, multi-objective optimality and thermodynamic analysis of network biology.

Matteo Pasquali, Professor in Chemical and Biomolecular Engineering (joint appointment in Chemistry); Chemistry Department Chair; Ph.D. Minnesota, 1999. Micro- and nano-structured liquids, carbon nanotubes, free surface flows, computational modeling of processing flows.

Marc A. Robert, Professor in Chemical and Biomolecular Engineering; Ph.D. Swiss Federal Institute of Technology, Lausanne, 1980. Thermodynamics, interfacial phenomena, thin films, random media.

Laura Segatori, Associate Professor in Chemical and Biomolecular Engineering (joint appointments in Bioengineering and Biochemistry and Cell Biology); Ph.D. University of Texas at Austin, 2000. Molecular engineering of protein folding catalysts and chaperones.

Francisco Vargas, Assistant Professor; Ph.D. Rice University, 2010. Phase behavior and flow assurance.

Rafael Verduzco, Louis Owen Assistant Professor; Louis Owen, Junior Faculty Chair; Ph.D. California Institute of Technology, 2007. Polymer design and synthesis, organic electronics, liquid crystals, and polymer self-assembly.

Michael S. Wong, Department Chair and Professor (joint appointment in Chemistry); Ph.D. MIT, 2000. Catalysis, quantum dots, hollow microspheres, materials chemistry, green chemistry, nanotechnology.

Kyriacos Zygiourakis, A.J. Hartsook Professor (joint appointment in Bioengineering); Ph.D. University of Texas at Austin, 2005. Molecular Cell Biology); Ph.D. University of California, 2001. Metabolic engineering, functional genomics, systems biology, microbial fermentations, chemicals and fuels from renewables.

Scott Wellington, Distinguished Faculty Fellow; Ph.D. Case Western Reserve University, 1972. Heavy crude upgrating, enhanced oil recovery, CO2 foaming agents.

For Fall 2014, the department hired teaching faculty to alleviate overcrowding in classes. They are:

- Dilip Asthyagiri
- Gautom Das
- Rocío Doherty
- Mayank Gupta
- Peng He
- Kimberly Heck
- Vahid Taghikhani

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Alumni Advisory Committee

The ChBE Alumni Advisory Committee was established in 2009 and has been active for the past 5 years supporting the ChBE department, alumni, and students. Our focus areas for this year include publishing the annual ChBE department newsletter, setting up a mentoring program with the AICHE student chapter, and hosting networking events.

We are always looking for enthusiastic alumni to help serve on the committee or work on projects. The committee meets once a month on the Rice campus. If you are interested in joining the committee or becoming a mentor to graduate or undergraduate students, contact Garrick Malone (gmalone@alumni.rice.edu).

As a reminder, we send out event reservation information through the Rice alumni office, so be sure your contact information is up to date on the online alumni directory (https://online.alumni.rice.edu).