



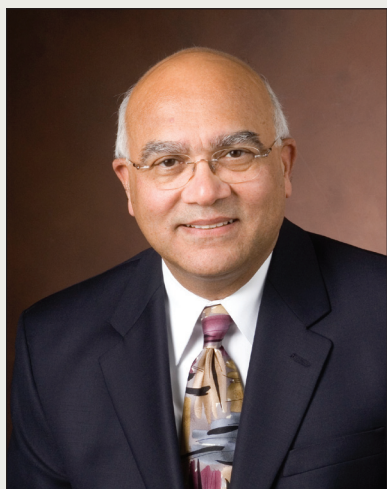
SPRING 2014

**CHEMICAL ENGINEERING**

**NEWSLETTER**

**UNIT OPERATIONS LABORATORY THEN AND NOW**

# MESSAGE FROM THE HEAD



## Welcome to the Spring 2014 issue of the Chemical Engineering Newsletter!

This academic year we celebrated a wonderful milestone in our School and building history, the renovation of the Unit Operations Laboratory. Ever since the beginning of the ChE program at Purdue, the Unit Operations Laboratory has been a pivotal part of our undergraduate education, the place where our seniors apply all the concepts they have acquired during their professional journey in Chemical Engineering. Through generous donations from alumni, corporations, and a Purdue University Repair and Rehabilitation contribution, we were able not only to complete the physical renovation of the lab and experiments, but also to endow the laboratory so that all future operation, upgrade and renovation needs are provided for in perpetuity. You can read more about this story on page 5.

The College of Engineering has embarked on an ambitious strategic growth plan, which calls for 107 new faculty members (30% increase from the current 358 count), 105 new staff members and 88 teaching assistants to be added throughout all schools and programs in Engineering over the next four years. This growth is driven by the need to align Purdue Engineering undergraduate student per faculty ratio to a similar

level as our peers. Consequently, our School is experiencing a period of unprecedented growth too, which will begin by hiring several faculty members. This will also lead to a 10% increase in our undergraduate student population and significant growth of the graduate program. As a premier research institution, we also have a need to expand and deepen our expertise in game changing areas, such as energy conversion and storage, computational materials design, biological engineering, advanced manufacturing and pharmaceuticals.

As a prelude to this growth, in January 2014 we were joined by two new Associate Professors: Carl Laird (PhD, Carnegie Mellon University, 2006) and Vilas Pol (PhD, University of Bar-Ilan, Israel, 2005). These were in addition to Associate Professor Jeffrey Greeley (PhD, University of Wisconsin-Madison, 2004) and Assistant Professor Raj Gounder (PhD, University of California-Berkeley, 2011) who joined in Spring and Fall 2013, respectively.

With 542 undergraduate students (sophomores to seniors) and 142 graduate students enrolled for fall 2013, we are one of the largest Chemical Engineering educational programs in United States. As always, the quality of our students is exemplified by their achievements. For the fourth year in a row, the Indiana Soybean Alliance Innovation Competition top prize went to a team including a Purdue ChE graduate student - Nicole Devlin, and an undergraduate student - Yanssen Tandy, for their Filasoy product, a next generation 3D printing material. In addition, junior Haefa Mansour was selected from over 600 candidates to present her undergraduate research work at the 18th edition of the "Posters on the Hill" annual competition organized in April 2014 in Washington, DC, and was also selected to receive a Goldwater scholarship.

We are proud of our faculty, staff and students and look forward to showcase their work and accomplishments, just stop by for a visit!

Sincerely,



Arvind Varma  
R. Games Slayter Distinguished Professor  
Jay and Cynthia Ihlenfeld Head of Chemical Engineering

To make a gift to the School of Chemical Engineering, please contact:

**David Williams**  
Senior Director of Development  
and Alumni Relations

(765) 427-0527  
dmwilliams@prf.org

## TELL US WHAT YOU THINK:

Share your memories, react to a story, or let us know your thoughts about a particular issue. Write to us at [cheschool@ecn.purdue.edu](mailto:cheschool@ecn.purdue.edu). In doing so, you grant us permission to publish your letter in part or in whole in an upcoming issue. We reserve the right to edit letters for length and clarity.

**ADMINISTRATION:** Head: **Arvind Varma**  
Managing Director: **Cristina Farmus**  
Website: <https://engineering.purdue.edu/ChE>

**COVER PHOTO CREDIT:** Vince Walter, Vincent's Eye



# AROUND THE SCHOOL

## FACULTY AWARDS AND HONORS

**Rakesh Agrawal** – Elected Member of the American Academy of Arts and Sciences, 2013; Received IIT-Kanpur Distinguished Alumnus Award, 2013; Elected Fellow of the National Academy of Inventors, 2014

**Bryan Boudouris** – Invited to attend the 2013 National Academy of Engineering's Frontiers in Engineering Symposium, 2013

**James Caruthers** – Named Gerald and Sarah Skidmore Professor

**Nicholas Delgass** – Elected Fellow of AIChE, 2013; Received the 2013 Herman Pines Award in Catalysis, 2013

**Doraiswami Ramkrishna** – Received 2013 Purdue Sigma Xi Chapter Faculty Research Award, 2013

**Fabio Ribeiro** – Named R. Norris and Eleanor Shreve Professor of Chemical Engineering

**Arvind Varma** – Received the Warren K. Lewis Award, AIChE, 2013

**Yue Wu** – Selected Fellow of the Purdue Entrepreneurial Leadership Academy, 2013 – 2014

## STUDENT AWARDS AND HONORS

**Kaoutar Abbou Oucherif** (Graduate Student) – Graduate Student Symposium in Manufacturing Science & Engineering Award, AAPS, 2013

**David Acevedo** (Graduate Student) – National Science Foundation Graduate Research Program Fellowship, 2013

**Janie Brennan** (Graduate Student) – Travel Award, Women's Initiatives Committee, AIChE, 2013

**Danni Gao** (Graduate Student) – Second place, American Chemical Society Great Lake Chapter Poster Competition, 2013; Travel Award, Women's Initiatives Committee, AIChE, 2013; Young Researcher Travel Award, NASCRE-3 Conference, 2013; Best Poster Award AIChE annual meeting, 2013

**Emre Gencer** (Graduate Student) – Global Policy Research Institute Fellowship, Purdue, 2013

**Anshu Gupta** (Graduate Student) - First place, Indiana Soybean Alliance Competition, 2013

**Charles Hages** (Graduate Student) – Travel Award, Energy Materials Forum, MRS, 2013

**Greg Honda** (Graduate Student) – Best Presentation Award Travel Award, NASCRE-3 Conference, 2013; Travel Award, Catalysis and Reaction Engineering (CRE) Division, AIChE, 2013

**Elcin Icten** (Graduate Student) - IN-MaC graduate Fellowship, Indiana Next Generation Manufacturing Competitiveness Center, 2013-2015

**Dharik Mallapragada** (PhD 2013) – Best Presentation Award, AIChE Annual Meeting, 2012

**Haefa Mansour** (Junior) – First place, SURF Poster Competition, Purdue, 2013

**Ankur Sarkar** (Junior) – NIST SURF Fellowship, University of Colorado, Boulder, 2013

**Meenesh Singh** (PhD 2013) – College of Engineering Outstanding Research Award, Purdue, 2013; Process Development Division Student Paper Award, AIChE, 2013

**Renay Su** (Graduate Student) – Third place, American Chemical Society Great Lake Chapter Poster Competition, 2013; Bilslund Dissertation Fellowship, College of Engineering, Purdue, 2013

**Sara Yohe** (PhD 2013) – Kokes Travel Award, 23rd North American Catalysis Society, 2013

## SANGTAE KIM

### Distinguished Professor of Chemical Engineering

Distinguished professor Sangtae Kim received the **2013 Ho-Am Engineering Prize** from South Korea, the highest engineering research award issued by that nation. The award includes a prize of \$265,000, a gold medal and a laureate diploma. The Ho-am award is issued in five categories: science, engineering, medicine, the arts and community service.



*Dr. Kim's accomplishment was celebrated during a campus-wide reception on June 22, 2013.*

## GRADUATE STUDENT ORGANIZATION RESEARCH SYMPOSIUM AWARDS AUGUST 2013

### Oral Presentations

**First Place: Anuj Verma**, Advisors: **W. Nicholas Delgass** and **Fabio H. Ribeiro**, Title: "Development of a new method to detect Cu ion clustering in Czu-SSZ13 for DeNOx applications"

**Second Place: Vinod Kumar Venkatakrishnan**, Advisors: **Fabio H. Ribeiro**, **Rakesh Agrawal** and **W. Nicholas Delgass**, Title: "Lab-scale process development for high-pressure fast-hydrolysis and catalytic hydrodeoxygenation for production of liquid fuel from biomass"

**Third Place: Aniruddha V. Kelkar**, Advisors: **Elias I. Franses** and **David S. Corti**, Title: "On a collision course... Prediction and Control of Particulate Aggregation and Deposition in Dispersion Flows"

**Honorary Mention: Dhairya Mehta**, Advisors: **Fabio H. Ribeiro**, **Rakesh Agrawal**, **W. Nicholas Delgass**, Title: "Millisecond timescale hydrolysis of cellulose and Vapor-phase hydrodeoxygenation kinetics of furfural"

### Poster Presentations

**First Place: Mary Jane Brennan**, Advisor: **Julie C. Liu**, Title: "Adhesive elastomeric proteins as soft tissue surgical glues"

**Second Place: Agnes Mendonca**, Advisor: **Chongli Yuan**, Title: "5-hydroxymethylation of cytosine has a sequence dependent effect on nucleosomal stability"

### Third Place (Tie):

**Rohit Jaini & Longyun Guo**, Advisor: **John A. Morgan**, Title: "Improving biofuel production by kinetic modeling of lignin metabolism"

**Gregory Honda**, Advisor: **Arvind Varma**, Title: "Hydrodynamics of Trickle-Bed reactors with Particle Size Distribution"

# DEVELOPMENT UPDATES

## GRADUATE EDUCATION MATCH

The recent \$3 million dollar Graduate Education Challenge Match offered by the University elicited an outstanding response from six Chemical Engineering alumni, who accepted the challenge and created endowments in support of the School. Each new gift was equally matched, providing for the establishment of six named endowments in support of fellowships, assistantships, research travel awards, lectureships and general graduate education. These benevolent donors are helping ChE graduate students meet their financial challenges, while enhancing their educational experience in the School of Chemical Engineering. Special thanks go to the following donors, who together created a total of \$1.5 million in endowments to support ChE graduate students.

**Arindam Bose (PhD '80)**

**Robert (BSChE '69) and Susan Gadowski**

**Duncan (PhD '64) and Suzanne Mellichamp**

**Gary (BSChE '58, MSChE '63, PhD '66) and Steven Poehlein**

**Amarendu (BSChE '51) and Danute Roy Choudhury**

**James (BSChE '68, MSChE '78, PhD '81) and Sylvia Ryland**

## MELLICHAMPS

### ENDOWED LECTURESHIP IN CHEMICAL ENGINEERING



**DUNCAN AND SUZANNE MELLICHAMP**

what can be produced by a living organism.

Duncan Mellichamp (PhD '64) began graduate studies at Purdue at a time when the campus programs in automatic control were among the earliest in the United States. His dissertation, mentored by groundbreaking process control textbook authors Donald Coughanowr and Lowell Koppel, dealt with adaptive control of pH, the first such process application. Mellichamp is a Fellow of AIChE and recipient of numerous awards and honors, including Purdue's Outstanding Chemical Engineer award in 2007. He is the author of more than 100 research publications on process modeling and plant-wide control; many deal with complex processes via model simplification techniques. Professor Emeritus at the University of California, Santa Barbara, since 2003, he still co-teaches the ChE senior plant design class pro bono and researches profitability measures for plant conceptual designs subject to risk.

An educator as well, Suzanne Mellichamp began a 30-year elementary and special-education teaching career in her home state of Iowa. After finishing coursework at Purdue, she taught in Lafayette, North Carolina, and finally for 20 years in Santa Barbara. In 1970, she earned her master's degree in Education from the University of California, Santa Barbara. She serves on the board of directors of Santa Barbara Beautiful, was on the board of the Wildling Art Museum and is a longtime docent for the Santa Barbara Museum of Art.

Duncan and Suzanne Mellichamp have dedicated their lives improving education, through their philanthropy and service. The School of Chemical Engineering is fortunate to be the beneficiary of their generosity. Duncan and Suzanne recently endowed an annual lecture series intended to recognize the work of a distinguished young engineering or scientific researcher from a university, industry or national laboratory in North America. Their contribution was equally matched by the University.

The inaugural Mellichamp Lecture was held on Thursday, October 3, 2013, and featured Brian F. Pfleger, associate professor of Chemical and Biological Engineering at the University of Wisconsin-Madison. Pfleger's lecture was titled, "Sustainability via Synthetic Biology – A Growing Role for Biotechnology in the Chemical Industry" and focused on how advances in synthetic biology and other biological engineering disciplines have expanded the scope of

## SEPARATIONS

Three distinguished faculty members of our School conduct cutting edge research and have advanced the field of separations. Rakesh Agrawal, Linda Wang, and Phil Wankat have devoted their careers to breakthrough fundamentals and applications in this important field of Chemical Engineering.

While at different phases and stages of their academic careers at Purdue, each has made trailblazing contributions to the discipline.

**Dr. Agrawal** is the Winthrop E. Stone Distinguished Professor of chemical engineering at Purdue University and a National Medal of Technology and Innovation Laureate. Before joining Purdue's faculty in 2004, he worked for twenty four years with Air Products and Chemicals, Inc., where he was appointed to the highest technical position in the company, an Air Products Fellow. He currently holds 118 US patents and 500 international patents. His contributions to the area of separations primarily focus on improving the energy efficiency of separation plants using distillation, membranes, and adsorption. His current interest is in multi-component separations, and involves sequencing of distillation columns and membranes. The methods developed are general and are applicable to numerous separations in chemical and petrochemical plants, providing easy to use tools for industrial settings. While at Air Products, he worked on many gas separation problems, including air separation, hydrogen production, and various electronic gases. His current research involves renewable energy, developing low-cost methods for synthesizing solar cells based on nanotechnology, efficient conversion of biomass to liquid fuel for transportation and maximizing liquid fuel from a given quantity of biomass. Passionate about his work, Dr. Agrawal added, "I dream of a society which can sustain itself on renewable energy, not fossil fuel resources. I'm doing all I can to make that dream a reality for future generations."

**Professor Nien-Hwa (Linda) Wang** earned the distinction of becoming the School's first female professor in 1980. Her research interests include chemical and biochemical separations with current projects focusing on adsorption and chromatography processes, which are highly selective and versatile techniques capable of producing pure materials of uniform size, shape, composition, and surface properties. The goal of her research is to understand the kinetics and equilibrium of competitive adsorption at liquid-solid interfaces and to develop novel, economical large scale adsorption processes. She uses various theoretical analyses, computer simulations, and experimental studies to address these important issues. In collaboration with industry and national laboratories, her research group is developing novel large-scale, simulated moving bed chromatography processes for the recovery of nonbiodegradable chemicals from waste streams and a variety of

biochemicals including sugars, antibiotics, anticancer drugs, amino acids, peptides, and proteins from biological sources. In 2008, Dr. Wang won the Violet Haas Award which recognizes individuals, programs or departments at Purdue that have effectively facilitated the advancement of women or have generally enhanced a positive professional climate for women at the University. Dr. Wang is one of the founding members of the Women Faculty in Engineering Committee which continues to advocate cultural and gender diversity at Purdue.

**Professor Phillip Wankat**, Clifton L. Lovell Distinguished Professor of Chemical Engineering, has spent the majority of his academic career—43 years at Purdue—focused on separation processes and improving engineering education. His most recent research focuses on adsorption, large-scale chromatography and simulated moving bed systems and distillation. According to Wankat, because of the huge scale of distillation operations, even modest improvements can have a major impact. He is currently exploring methods to improve rectifying columns. Capital cost reductions of up to fifty percent are predicted with the same energy use and better turn down properties.

**Dr. Wankat's** career at Purdue began in February 1970 at the beginning of spring semester. Phil completed his PhD defense at Princeton on Friday and started teaching at Purdue on Monday. Phil commented that his start-up package, ". . . consisted of \$1000, support for two graduate students, and the opportunity to teach during summer to receive summer pay." Dr. Wankat is a national leader in developing methods to teach graduate students and new professors how-to-teach and improve the efficiency and effectiveness of faculty. Currently, he is contemplating writing a second edition of his book, "Teaching Engineering", first published in 1993 and still considered a gold standard in academia. In his reflections regarding the re-write, he added, ". . . a lot has happened in twenty years, so it will be a lot of work." In 2012-13, Phil worked on two major review papers, "Five Major Shifts in 100 Years of Engineering Education," Jeffrey E. Froyd; Phillip C. Wankat; Karl A. Smith, and "Progress in Reforming Chemical Engineering Education," Annual Review of Chemical and Biomolecular Engineering, Vol. 4: 23-43 (June 2013). This year, Dr. Wankat will close his research program after completing the second of five years of Purdue's phased retirement program. Hardly slowing down, Phil taught at the University of Canterbury in Christchurch, New Zealand in fall 2012. Last spring, he focused on ABET accreditation for the Multidisciplinary Engineering program and continued to teach *Chemical Engineering Experience in Teaching*, a course for teaching assistants.

# UP CLOSE ALUMNI

## ALUMNUS ALAN FOX (BSCHE '55) ENDOWS THE UNIT OPERATIONS LAB

Alan Fox graduated with a Bachelor's Degree in Chemical Engineering from Purdue in 1955. After graduation he served in the military for two years and then worked as a chemical engineer until 1960 when his family business needed a new leader. Thus, he returned to Indiana and took over Fox Products, a company founded by his father in 1949. Fox Products manufactures double-reed musical instruments, including bassoons and oboes and counts among its clients some of the most famous orchestras in the United States: the Chicago Symphony Orchestra, the Philadelphia Orchestra, the Detroit Symphony Orchestra, the St. Louis Symphony, the San Francisco Symphony, and in the world: the Berlin Philharmonic (Germany), and the Nagoya Philharmonic Orchestra (Japan). While maintaining the highest quality and manufacturing all instruments in Indiana, Alan Fox transformed the company into a global brand, increasing the company's production from 63 bassoons a year to nearly 2,200. In 1992, Fox received the Purdue Outstanding Chemical Engineer Award for his contributions

to the music world. As of 2014 the business is still thriving in South Whitley, Indiana, even though he is now retired.

In 2013 Fox became aware of a need in the School of Chemical Engineering at Purdue and seized the opportunity to endow the Unit Operations Laboratory with a \$1 million gift to address regular operations, maintenance and future upgrades. While the 2012-13 lab renovation was accomplished with funds from alumni, corporations and Purdue, the Fox endowment provides a distinct advantage, making it possible for the lab to perpetually remain a state-of-the-art facility at the forefront of Chemical Engineering education. Besides making trailblazing contributions to the music industry as a chemical engineer, Mr. Fox also set a new standard for undergraduate education, as the Purdue ChE Unit Operations Lab is the first undergraduate laboratory to be endowed. In honor of his gift, the lab has been dedicated and named as the **Alan H. Fox Unit Operations Laboratory**.

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### PURDUE UNIVERSITY SCHOOL OF CHEMICAL ENGINEERING UNIT OPERATIONS LABORATORY UPGRADE

During summer 2012 and 2013, the School of Chemical Engineering upgraded the Unit Operations Laboratory, where our seniors have the opportunity to prepare for their post-graduation careers with hands-on experimentation that puts classroom learning into practice. They engage in creative problem-solving and decision-making activities and develop communication skills. This upgrade was necessary so that our students can be educated using laboratory equipment and experiments designed for today's industrial reality.

**The donors listed below have impacted the School of Chemical Engineering by providing \$550,000 to make the upgrade possible. The School of Chemical Engineering is deeply grateful for their loyalty and generosity.**

#### ALUMNI

Ambassadors Club ChE Fund  
Stuart Bender (BSChE '51)  
Robert (BSChE '53, MSChE '59, PhD '61) & Chloe Bradshaw  
Donald Briggeman (BSChE '50)  
Concepcion (PhD '97) Burgos-Rubio & Maria Guntin-Burgos  
William (BSChE '82, MSChE '94) & Kathy Clark  
Robert (BSChE '53, HDR '92) & Virginia Covalt  
David (BSChE '88) & Robin Fleming  
Jeffrey Frato (BSChE 2008)  
Robert Gilewski (BSChE '73) & Nancy Kuppersmith  
Timothy (BSChE '84) & Erin Goedeker  
David (BSChE '84) & Starla (BSChE '82) Hazen  
Jeff Hemmer (BSChE '80)  
Thomas (BSChE '69, MSChE '74) & Kaye Hertwig  
James Hoover (BSChE '49)  
Patrick (BSChE '81) Houghton & Elizabeth Schaub  
Robert (BSChE '51) & Lisa Johnson  
Soundararajan (MSChE '91, PhD '96) & Viji Krishnaswami  
David (BSChE '72) & Sherri Leonard  
David (BSChE '74) & Cynthia Lichtenheld  
Richard Lyon (BSChE '56)

Elaine Maldonado (BSChE '90)  
David (BSChE '74) & Sally Marlin  
Timothy (BSChE '88) & Lisa Moser  
Matthew Perkins (MSChE '95)  
Jennifer (BSChE '97) & Christopher Pipkin  
Gary Poehlein (BSChE '58, MSChE '63, PhD '66)  
Richard (BSChE '63) & Georgeann Reitz  
Glen Richardson (BSChE '72) & Judith Brown  
Leonard Rossa (BSChE '59)  
Stephen (BSChE '59) & Janice Sawochka  
Lawrence (BSChE '67) & Lynn Shute  
Lise (BSChE '78) & Kevin Sigward  
Alan (BSChE '61) & Phyllis Silver  
Charles (BSChE '80) & Leigh Ann Smith  
George (BSChE '56) & June Smith  
Michael (BSChE '84) & Susan Terry  
Gordon (BSChE '51) & Patricia Thomson  
Vern (BSChE '53, PhD '63, HDR 2007) & Barbara Weekman  
John (BSChE '40, MSChE '41) & Frances Whitson  
Natalie Wisniewski (BSChE '94)  
Marcia (BSChE '77) & Robert Ziek

#### CORPORATIONS

Air Liquide  
Air Products  
Anheuser Busch  
CountryMark  
Honeywell - UOP  
Lubrizol  
Phillips 66  
Thermco Instrument

#### FACULTY

Dr. KC and & Juin-Ying Chao  
Dr. Arvind and Mrs. Karen Varma

### PURDUE UNIVERSITY, REPAIR AND REHABILITATION FUND



# INSIDE THE IMPACT

## THE UNIT OPERATIONS LABORATORY UPGRADE PROJECT

By: Professor Enrico N. Martinez

There is a tremendous amount of history that will always be part of the newly renovated and upgraded Alan H. Fox Unit Operations Laboratory.

Looking back, the need for the laboratory first emerged in the summer of 1935 when a required set of two unit operations laboratory courses were introduced in the undergraduate Chemical Engineering curriculum by Professor Clifton Lovell. The laboratory was originally housed in Heavilon Hall and was moved to its current location in the summer of 1940. The two-course set evolved through the years, incorporating the historic changes in the Chemical Engineering discipline and thus changing the experimental setups to include separation processes, transport phenomena and reaction engineering. When the Fundamentals Laboratory was introduced into the curriculum in 2011, the Senior unit operations laboratory was decreased to one four-credit course. Several prominent faculty members have supervised the laboratory over the years, including Alden Emery and Neal Houze. Staff members such as Wayne Muench, and proficient technicians like Hoyt Herron, Jim Snell, Ken McGlothlin and Rick McGlothlin have all played a significant role in the development of the physical facilities, as well as the teaching materials through the years.

### The Renovation's Impact

In the fall of 2011, Arvind Varma, R. Games Slayter Distinguished Professor of Chemical Engineering and Jay and Cynthia Ihlenfeld Head of Chemical Engineering, decided to launch the renovation of the Unit Operations Laboratory. The upgrade was essential for ChE students to gain experience using laboratory equipment and experiments designed for today's industrial reality.

The Alan H. Fox Unit Operations Laboratory (see story on page 4) now provides an appropriate setting for seniors in chemical engineering to sharpen their skills and apply the theoretical training gained in the classroom. Advanced undergraduate students investigate open-ended chemical engineering design projects and engage in creative problem-solving and decision-making activities. In this laboratory, seniors develop their scale-up, process design, experimental design, data analysis and testing skills, as well as experience working in diverse teams and reporting their results orally and in written form. The projects assigned in this laboratory course have involved working with a bench scale packed bed catalytic reactor, an immobilized enzyme reactor and a soluble enzymatic reactor in which reaction kinetics and mass and heat transfer effects on reaction rates are investigated; a second set of projects has involved

a variety of separations: gas-liquid absorption, sieve-tray fractional distillation, membrane oxygen separation from air, liquid-liquid extraction and ion exchange recovery of salts from dilute solutions.

In planning for the renovation, feedback was gathered from both faculty and Industrial Advisory Council members. The decision to eliminate obsolete experiments came first. Then, in order to supply the students with an even richer experience during their measurement/analysis project, it was deemed necessary to add new experimental setups, including a process control system that can be independently operated; two water cooling towers; three tray driers, and flash vaporizer with PID controller. In addition, two new design projects were developed and built in the laboratory. These focus on crystallization and polymerization processes.

Other modernizations include relocating the two catalytic dehydrogenation projects that had been set up in the mezzanine to the main lab floor, along with the gas chromatographs and printers that are used for the binary distillation project. Currently, all the experimental setups are located on the ground floor, which improves the safety of students, faculty and staff, while also providing enhanced supervision and guidance during lab sessions. As a result, a historical display of equipment and tools that can be accessed independently from the first floor of Forney Hall has been added on the mezzanine.

Because of Dr. Varma's vision and the generosity of a distinguished group of alumni and corporate sponsors, the full renovation process was completed during the summers of 2012 and 2013. The Alan H. Fox Unit Operations Laboratory is now a state-of-the-art facility equipped to provide a world-class education to our chemical engineering students.



Alan Fox and Arvind Varma cutting the ribbon at the Unit Ops Lab inauguration in September 2013

# UP CLOSE UNDERGRADUATE STUDENT HAEFA MANSOUR

By: Jessica Hollinger



Associate Dean Melba Crawford presenting the 2013 SURF Award to Haefa Mansour.

In 2011, Haefa Mansour came to Purdue thinking she would use her engineering undergraduate degree as a springboard for medical school. After gaining exposure to new educational paths, Haefa's world widened, and she discovered the numerous career possibilities she could explore with a chemical engineering degree. Hard-working and determined since childhood, Haefa earned both the Purdue Trustees Scholarship (for out-of-state students) and the Stamps Scholarship, which more than cover

her undergraduate degree expenses. She attributes her disciplined work ethic to her parents, smiling when she speaks of her father, Adel. An immigrant from Tunisia, he came to the United States to study mechanical engineering after earning a full scholarship from the Tunisian government.

Haefa participated in the honors engineering learning community during her freshman year and attributes that bonding experience with her satisfaction in choosing Purdue—despite her acceptance to other prestigious engineering schools including MIT and Berkeley. Haefa related why she felt Purdue was the best choice for her, "Purdue is a giant school with a small-town feel. Despite the fact that there are tens of thousands of students, I never feel like I'm just a number. There is a sense of closeness in the community and within chemical engineering in particular—chemical engineering students at Purdue bond together and help each other out."

Fortunate to be conducting hands-on research since her freshman year, Haefa logs twelve (or more) lab hours each week, under the direction of Professor Julie Liu. In August, she won the "Top Research Poster Presentation Award" for her work and was honored at Purdue's Shively Club in Ross-Ade Stadium. One of her goals, Mansour admitted, is to be published before graduation. "I've done research since my first few weeks on campus as a freshman and I'd like to hopefully have my research published in an academic journal before I graduate." Most recently, Haefa has been selected out of 600 applicants to participate in the *Posters on the Hill* event in Washington D.C. in April 2014, to present her work to members of the U.S. Congress.

Reflecting on her short-term and long-term goals, Haefa stressed that her goal is to continue to stay busy with extracurricular activities and keep her GPA above 3.9 to be a competitive candidate for graduate school . . . yet still make time for new experiences with friends.

Haefa nurtures her mind and body outside the classroom, maintaining a disciplined running schedule and dancing when she has the opportunity. She loves to travel to Tunisia where her father's family still resides. Haefa's love for this area has sparked a desire to learn to cook the regional food, as well as speak the language, putting forth efforts to communicate in French and Arabic. As for future goals and aspirations when her formal education concludes, Haefa confided, "My dream is to eventually take the knowledge I have gained in my education and research and use it to start a company. I enjoy taking charge of my own work and tackling open-ended problems, so becoming an entrepreneur is my dream job!"

## AICHE NOTES

By: Austin Tackaberry



Chem-E Car Team in competition

The Purdue student chapter of the American Institute of Chemical Engineers (AIChE) started the academic year by introducing new chemical engineering students to the organization via a callout in early fall

2013. A major event was the annual AIChE Industrial Roundtable dinner banquet, which took place on September 17, 2013. The Industrial Roundtable, an event organized solely by students through the Purdue Engineering Student Council, brought hundreds of companies to the West Lafayette campus. The AIChE banquet provided the opportunity for chemical engineering students to connect with prospective employers in a casual and informal way.

Throughout the year, the student organization holds monthly meetings,

inviting speakers to educate members with valuable and relevant career lessons. AIChE also hosts information sessions for several companies so that students may determine if the company is a good fit for their skills and interests. AIChE provides philanthropic and social opportunities for students' personal growth, while contributing to their current community, including Relay 4 Life, blood drives and bake sales.

Overall, AIChE's vision is to provide value as the global leader of the chemical engineering profession, the lifetime center for professional and personal growth, safety of chemical engineers, and the foremost catalyst in applying chemical engineering expertise in meeting societal needs. The Purdue student chapter adheres to this vision with a main goal of connecting Purdue ChE students with each other, professors and potential employers. Ultimately, we work to expand Purdue's prominence in chemical engineering and strive to provide all chemical engineering students with valuable opportunities to start them off on the path toward success.



# Graduate Student Organization ANNOUNCEMENT

By: Frank DeVilbiss

This year, the Graduate Student Organization has planned a variety of events to engage the graduate student body. The goal has been to expand the number and scope of activities in order to cater to a wider range of interests. There is a palpable enthusiasm among the GSO officers to engage more students and foster a strong sense of community among the graduate students.

GSO makes possible programs such as Future Faculty Lunches and Truth & Beauty Seminars and recently added two mentorship programs. One of these aims to match incoming first year graduate students with current students, and the other seeks to pair current graduate students with graduate alumni, who have advice to offer on career planning and advisor relationships.

Through the hard work of the Social Committee and its officers, GSO hosts social activities such as a soccer tournament, pumpkin carving and ice skating. Outreach opportunities this year mainly center on the after-school science education program at Murdock Elementary School. Every other week, ChE grad students teach a science lesson tailored to children 8-9 years old. Finally, we are excited to welcome two new groups under the GSO umbrella – the ChE Safety Committee and the Sustainability Committee.

## Officers 2013-2014 School Year:

**Frank DeVilbiss, President**

**Caitlin Schram, Vice President/Treasurer**

**Mark Koeper, First-year Representative**

**Nicole Devlin, Outreach Committee Chairperson**

**Bethlehem Negash, Student Advocacy Officer**

**Holly Chan, Inter-GSO Events Committee Representative**

**Shankali Pradhan, Purdue Graduate Student  
Government Representative**

**Prithish Kamat, Social Events Committee Co-chairperson**

**Jamie Harris, Sports Events Committee Co-chairperson**

**Agnes Mendonca, Co-curricular Committee Chairperson**

**Rohit Jaini, Sustainability Committee Chairperson**

**Safety Committee Chairperson - Kaiwalya Sabnis**

# GRADUATE WOMEN GATHERINGS

By: Xiaohui Liu

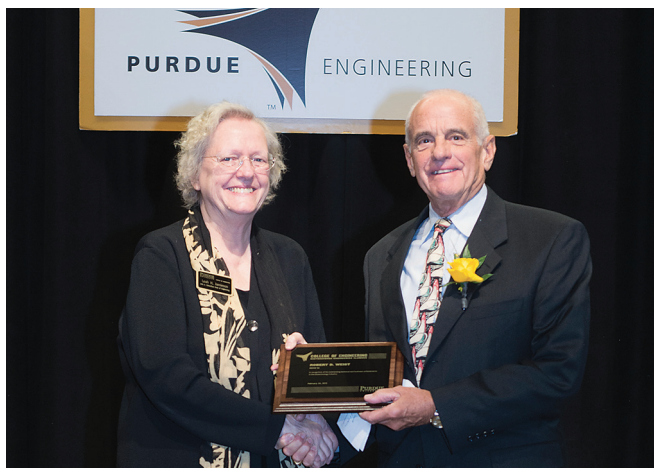
A School initiative started three years ago, the Graduate Women Gatherings (GWG) is a group of women graduate students in chemical engineering at Purdue who meet to support each other. Bagel breakfast is the most popular GWG activity, which gives women in the school a chance to network, learn from each other's experiences and get advice for a successful experience throughout graduate school. During these events, women enjoy bagels and coffee and, more importantly, talk with women in the School who are at different points in their PhD program and from different research groups. All the members look forward to these gatherings and always have a great time!



June 2013 gathering

# PURDUE COLLEGE OF ENGINEERING DISTINGUISHED ENGINEERING ALUMNI AWARDS

Robert D. Weist (BSChE '62) and Henry T. Sampson (BSChE '56) received the 2013 Distinguished Engineering Alumni award from the College of Engineering on February 22, 2013.



**PICTURED:** Leah H. Jamieson, The John A. Edwardson Dean of Engineering and Ransburg Distinguished Professor of Electrical & Computer Engineering, presents Robert D. Weist (BSChE '62) with the 2013 Distinguished Engineering Alumni award.



**FROM LEFT TO RIGHT:** Henry T. Sampson (BSChE '56) is shown here with his wife, Laura Young-Sampson and Arvind Varma, R. Games Slayter Distinguished Professor of Chemical Engineering and Jay and Cynthia Ihlenfeld Head of Chemical Engineering.

# PURDUE OUTSTANDING CHEMICAL ENGINEERING ALUMNI AWARDS

On September 12, 2013, the 2013 School of Chemical Engineering Outstanding Chemical Engineer award was presented to Jennifer Sinclair Curtis (BSChE '83) and Ronald J. Unnerstall (BSChE '83).



**PICTURED:** Michael Harris, Professor and Director of Graduate Studies for Chemical Engineering, and Arvind Varma, R. Games Slayter Distinguished Professor and Jay and Cynthia Ihlenfeld Head of Chemical Engineering, present Jennifer Sinclair Curtis with her 2013 Outstanding Chemical Engineer award.



**PICTURED:** Osman Basaran, Burton and Kathryn Gedge Professor of Chemical Engineering, with Arvind Varma, R. Games Slayter Distinguished Professor and Jay and Cynthia Ihlenfeld Head of Chemical Engineering, and Ronald J. Unnerstall displays his 2013 Outstanding Chemical Engineer award.



# CLASS NOTES

## 1940's

**Milt Lauenstein** (BS '45) founded the Purdue Peace Project, which encourages and assists local leaders in West Africa to take action to prevent widespread violence.

## 1950's

**Robert H. Buckman** (BS '59) awarded Honorary Doctorate of Humanities at Rhodes College, Memphis, TN.

**Max C. Downham** (BS '58) serves as Executive Director of International College of Surgeons (similar to United Nations) with members in more than 100 countries.

**Richard Evans** (BS '57) retired as a colonel from the United States Army and currently works as a contractor to the Los Alamos National Laboratory at the Nevada test site.

**John (Jack) Roll** (PhD '62) heads the development committee for the American Friends of the Episcopal Diocese of Jerusalem.

## 1960's

**Bob Gadomski** (BS '69) joined the board of directors of the Lafayette Ambassador Bank, a division of Fulton Financial Corp.

**John Geoffrey Leech** (BS '66) recently retired after 20 years of active duty in the United States Navy as a Civil Engineer Corps Officer.

**Gary Poehlein** (BS '58, MS '63, PhD '66) volunteers for the Alexandria Seaport Foundation to educate young interns.

**Phillip Ranck** (BS '66) is currently developing new technologies for converting organic wastes to energy and other useful products, as Owner and President of Process Operations Consulting.

**Steven A. Savage** (BS '66) retired from Terra Industries to consult for nitrogen fertilizer and methanol projects.

**Lawrence A. Shute** (BS '66) retired from Firestone Fibers and Textiles and currently writes novels and short stories.

**Robert Wainwright** (BS '60) was promoted to Adjunct Professor at Iona College, New Rochelle, NY.

## 1970's

**Bruce E. Dale** (PhD '79), was named Distinguished Professor at University of Michigan.

**Deborah L. Grubbe** (BS '77, HDR 2010) recently was named Chief Marketing Officer of Near Miss Management.

**Howard Hodges** (BS '79) started Inflection Point LLC, a sales and sales operations consulting firm.

**Jay Ihlenfeld** (BS '74) retired from 3M and was elected to serve on the board of directors for Celanese Corporation, and has joined the Purdue Engineering Advisory Council.

**Cliff Kowall** (BS '74) recently was elected Technical Fellow for the Lubrizol Corporation.

**Jeffrey D. Mason** (BS '79) moved to Zurich for a three-year assignment, as Vice President of Purchasing for Ashland Inc.

**Stephen W. Mass** ('78) recently joined Valdes Engineering Company, as a Senior Project Manager.

**William (Bill) Menzies** (MS '71) recently retired from Midwest Research Institute and MRIGlobal-CBRN Defense.

**Douglas M. Sawyer** (BS '70) retired from Michelin Tire and continues to serve the company as a subcontractor.

**Raymond Eric Zbacnik** (BS '73) recently became a member of the research and design panel for Kiewit Power, where he works as Senior AQCS Specialist.

## 1980's

**Tim Goedecker** (BS '84) was appointed to oversee the environmental programs for all of the Phillips 66 refineries, increasing his responsibilities, as Manager of Environmental Programs and Consent Decree.

**William Goodwin** (BS '86) has started the Sloan Fellows Innovation and Global Leadership MBA program at Massachusetts Institute of Technology.

**John Klier** (MS '86, PhD '89) was named Distinguished Fellow, the most senior scientific position in Dow Chemical Company.

**Lewis, Greg** (BS '82) was promoted to Vice President of The Ethisphere Institute.

**Steve Lustig** (MS '85, PhD '88), Research Scientist at DuPont and Adjunct Professor in Chemical Engineering at the University of Delaware, is the winner of the 2013 Industrial Research & Development AIChE Award.

**Rajesh (Raj) Melkote** (BS '85) recently joined Honeywell Life Safety Products, as Director of Engineering, GSP Americas.

**Ray Mentzer** (MS '76, PhD '80) is teaching "Chemical Process Safety" at Tianjin University, which is part of a study abroad program at Texas A&M, where he serves on the faculty.

**Mike Mitchell** (BS '86) joined Crane Plastics (a division of Crane), as Vice President and General Manager of Profile Solutions.

**E. Terry Papoutsakis** (MS '77, PhD '80) received the 2013 D.I.C. Wang Award for Excellence in Biochemical Engineering, AIChE.

**Lawrence W. Rath** (BS '80) was promoted Senior Staff Engineer at Exxon Mobile Chemical in Baton Rouge, LA.

**David Rockstraw** (BS '86) was named Distinguished Achievement Professor and presented with the Ed and Harold Foreman Engineering Education Excellence Award at New Mexico State University.

**Mark A. Spalding** ('82 MS, '85 PhD) co-authored "Analyzing and Troubleshooting Single-Screw Extruders" with Gregory A. Spalding, focusing on the actual physics of the process—screw rotation physics, rather than barrel rotation physics.

**Gretchen Swain** (BS '89) received the Science, Technology, Engineering and Production (STEP) award from the Manufacturing Institute in February 2013.

## 1990's

**Kristi Anseth** (BS '92), was elected a member of the National Academy of Sciences.

**Greg Bauer** (BS '94) was promoted to Senior Director, Operations for five Packaging Solutions plants—divisions of PolyOne Corporation.

**Craig Beasley** (BS '96) was promoted to Vice President of Financial Business Planning at Biogen Idec.

**Chris Bowman** (BS ChE '88, PhD '91), was named Distinguished Professor at University of Colorado.

**Anthony Lowman** (PhD '97), was named Dean of Engineering at Rowan University.

**Thomas Manz** (MS '98, PhD 2009) joined as Assistant Professor in the Chemical Engineering Department at New Mexico State University.

**Craig Paterno** (BS '96) was appointed Director of North America Control Technologies for ABB Inc.

**Theodore (Ted) Pirog** (MS '95, PhD '98) is an energy advisor and principal contributor to the Global Energy Outlook at Exxon Mobil.

**Julia Ross** (BS '95) was appointed the Constellation Professor of Information Technology in the Chemical, Biochemical and Environmental Department at the University of Maryland, Baltimore County.

**Carrolette Winstead** (BS '95) presented at the annual United States Society on Dams (USSD) on the current regulatory outlook of mine tailings dam closures in Arizona.

**Natalie Wisniewski** (BS '94, PhD 2001) received the 2012 National Institutes of Health Director's Transformative Research Projects Award for development of in vivo biosensors and mobile health monitors for chronic disease management and personal health.

## 2000's

**Barbara Allen** (BS 2001) resigned her position as Senior Manufacturing Engineer to stay at home with her children.

**David Baylor** (BS 2007) earned his PE license this spring, and is working as a process engineer for PCI/Skanska.

**Nanette Boyle** (PhD 2009) started in fall 2013 at the Colorado School of Mines as Assistant Professor.

**Clayton K. Collings** (BS 2008) co-authored "Effects of DNA methylation on nucleosome stability" with Dr. John Anderson, and was published by Nucleic Acids Research in January 2013.

**Liudong "Jimmy" Cui** (BS 2006) accepted a position with Smith & Nephew, as Sr. Manufacturing Engineer.

**Robbie Cunningham** (BS 2010) was promoted from Process Engineer to Project Engineer and relocated to Rome, GA with International Paper.

**J.J. Dombek** (BS 2008) was promoted to H2/Co/SG Supply Manager at Air Products, in addition to beginning his MBA this fall at the University of Texas.

**Heather Emady** (BS 2007, PhD 2012) joined as a Postdoctoral Associate at Rutgers University.

**Kacey Fetcho-Phillips** (BS 2002) recently moved to Dublin, Ireland for her company, Amgen, where she works as Manufacturing Manager.

**Joseph Franses** (BS 2005) completed his medical degree from Harvard Medical School this May and is Resident in Internal Medicine at Massachusetts General Hospital.

**Kyla Hebard** (BS 2009) is transferring her engineering skills to business, as Associate Vice President of Citigroup in New York, NY.

**Jessica Moore** (BS 2007) is leaving Unilever, to serve as a volunteer for the Peace Corp, where she will lead the Water & Sanitation Project in Panama.

**Ryan Ott** (BS 2007) recently joined Polysciences Inc., as Director of Corporate Development, managing information technology and marketing for the Personal Care Retail Division.

**Kevin Roche** (BS 2004) received an NSF Graduate Research Fellowship in May 2013, in addition completing two years with the Peace Corp, and beginning his MS/PhD program in Environmental Engineering at Northwestern University.

**Jana Skiles** (BS 2008) is working for Air Products and Chemicals, as Project Development Engineer for Energy from Waste (EfW).

**Pervin Rusi Taleyarkhan** (BS 2009) began work as a Legal Associate for the Purdue Research Foundation, Office of Technology Commercialization, after earning her Juris Doctorate last spring from Indiana University.

**Salomon Turgman Cohen** (BS 2005) was appointed Assistant Professor of Chemical Engineering at Kettering University.

**Jared Witte** (BS 2009) earned his MBA from Texas A&M University, Corpus Christi.

## 2010's

**Steven Berube** (BS 2010) is working for Citizens Energy Group in Indianapolis, IN, as Production Process Specialist in the water quality group.

**Jason Wendholt** (BS 2011) supports a personal care and a protein powder manufacturing plant for Amway, as Process Manager.

**Lindsay Williams** (BS 2010) recently began her full-time graduate studies at Harvard Business School, in pursuit of her MBA.

**Nyah Zarate** (MS 2010, PhD 2013) was recently relocated to Portland, OR, as Process Engineer for Intel.



Our School uses a LinkedIn group to share information about the School, announce events, and post jobs. If you are interested in becoming a member, log in to LinkedIn, search for "Purdue ChE Alumni" under "Groups" and ask to join. Please make sure your ChE degree and graduation year are listed in your profile to enable fast processing.





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Photo by Stephanie Kennedy (BSCHE 2013)