

KOFFOLT NEWS

a publication for alumni and friends of Ohio State ChemE (CBE)

End of an Era: Saying Goodbye to Old Koffolt Labs



ALSO INSIDE:
Alumni Win Awards
Bhavik Bakshi's Research
Faculty Mentoring's Impact
Slip Slider and Joe Koffolt Remembered
Students Win Prestigious National Scholarships



Letter From The Chair



Dear Alumni and Friends:

We are now in the homestretch of our new building project. Later this fall, we will begin moving in. Spring semester will be launched in the new Koffolt Laboratories within the Chemical and

Biomolecular Engineering and Chemistry (CBEC) building, which includes significant research space that is shared with Chemistry. The Koffolt Laboratories portion of the building includes our Chemical Engineering teaching classrooms and unit operations laboratory and 50% of the research space in the rectangular “laboratory bar” building. We want to first thank Bill and Ernestine Lowrie for providing \$11M towards our campaign to raise \$17.5M as our share of the building cost—the whole enterprise cost \$126M with approximately \$78M coming from the state of Ohio, \$20M from the Provost’s Office and the rest from the Chemistry and Biochemistry Department.

We have a number of very attractive spaces in the building that have been named by generous donors, and I am pleased to acknowledge a few of them here. Dow Chemical named the student lounge on the 6th floor of office tower; Jim and Pat Dietz named the Unit Operations Laboratory; Karen and Milt Hendricks named the student lounge and locker area adjacent to the Unit Operations space; Mike and Arlene Winfield named the recitation classroom; and Doug Baughman named the two connected rooms constituting the design classroom, generously placing Slip Slider’s name on half the space.

Chemical Engineering alumni also named all three of the bridge conference rooms — the Class of ’61 has the second floor; Kay ’63 and Dean ’62 Snider, the third floor; and Dennis Hurley ’67, in honor of his father, Forrest Hurley ’42, has the 4th floor conference room.

Finally, we had 100% participation of the William G. Lowrie Department of Chemical and Biomolecular Engineering faculty contributing multi-year gifts to name the faculty conference room on the second floor in the research bar. And there are many other donors who named other conference rooms and office spaces in the building—it is not too late to add your name to this wonderful enterprise.

Formal ribbon cutting will be on April 10th, during the semester. Those able to attend will see the building in action as well as attend the various celebratory events which will be held that day. Everyone is invited.

Other highlights of this issue include L.-S. Fan’s progress on his chemical looping processes, which promises economical conversions of shale gas and other fossil energy sources to higher-value fuel and chemical products, awards won by Winston Ho, Jeđ Chalmers and Marty Feinberg, signal recognition of undergraduates Joseph Gauthier and Anna Dorfi—and much more.

Best wishes and Go Bucks.



NEW KOFFOLT LABS RIBBON-CUTTING!

APRIL 9-10, 2015

- Building Tours and Lecture Series
- Reception and Refreshments
- Special Guests and Group Toast
 - Celebrations of Class Gifts
 - Meet up with old classmates!
- Please join us. Everyone is invited!

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ON THE COVER:

Beautiful new
Koffolt Labs.

--Photo by Geoff Hulse.

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RECENT FACULTY AWARDS AND ACHIEVEMENTS



Brunelli publishes in Nature and Science magazines

NICHOLAS BRUNELLI joined CBE in January 2014 and within six months was published in two of the most prestigious and visible scientific publications in the world - *Nature Communications* and *Science* magazine. The *Nature* paper, "Direct synthesis of single-walled aminoaluminosilicate nanotubes with enhanced molecular adsorption selectivity" (February 17, 2014), describes a potential way to improve single-walled nanotubes, which are important building blocks for nanoscale science and technology. The *Science* paper, "Interfacial Microfluidic Processing of Metal-Organic Framework Hollow Fiber Membranes," (July 4, 2014), describes a novel method to overcome a significant barrier to creating high-selective membranes on commercially relevant scales.



Cooper is honored with the 2014 AIChE Founders Award

Chairman **STUART COOPER** was chosen from among 45,000 active members of the American Institute of Chemical Engineers (AIChE) to receive the 2014 Founders Award for Outstanding Contributions to the Field of Chemical Engineering. Recipients are deemed to have had a long and distinguished record of service to the profession, and to have made an important impact on chemical engineering. Cooper, a member of the National Academy of Engineering, has led the field in the synthesis and characterization of biomedical polyurethanes. He is also known worldwide for his fundamental work on phase separation in polyurethanes now widely used in the high-performance thermoplastic elastomer industry.



Chalmers named recipient of 2014 Cell Culture Award

JEFFREY CHALMERS was named the sole recipient of the global 2014 Cell Culture Engineering Award from Engineering Conferences International. The award, which recognizes Chalmers' outstanding contributions to the cell culture field and his service to the profession, is only given every other year. Chalmers' contributions include the elucidation of the mechanisms of cell damage in large-scale cell culture processes and advocating the use of a hydrodynamic parameter, energy dissipation rate (EDR), to quantify the hydrodynamic conditions in several types of bioprocess equipment.



Ho receives highest form of academic recognition in Republic of China

In July 2014, **WINSTON HO** was elected to membership in the Academia Sinica - the most preeminent academic institution in the Republic of China in Taiwan -- as an Academician. Ho has made pioneering and outstanding contributions to novel separations, gas treating invention and commercialization, and novel membranes and their new applications for energy and the environment.



Feinberg receives highest Ohio State teaching honor

During a class last May, **MARTIN FEINBERG** was surprised when Interim President Alutto entered and presented him with an apple and the 2014 Alumni Award for Distinguished Teaching. “Basically, we’re giving him this award because he can make very complicated things easy to understand,” Alutto said. Feinberg, who has been teaching at Ohio State since 1997, is considered a world leader in the application of mathematics to chemical engineering problems, and is extremely popular with students, who repeatedly praise his teaching.



Fan honored with Lumley Research Award

National Academy of Engineering member and Distinguished University Professor **L.-S. FAN**, who is known for inventing the leading clean-coal technology in the U.S., was honored with the Lumley Research Award by the Ohio State University College of Engineering. Fan’s one-step coal-drect chemical looping process for producing both electric power and high-purity CO₂ with low to negative net carbon emissions is considered to be the most advanced technology of its kind. Chemical looping can also be used for hydrogen, chemical, and fuel production such as converting shale gas to syngas.



Fan’s work commended at House Energy and Commerce hearing on clean coal technology

L.-S. FAN’s pilot project in Wilsonville, Alabama to scale up commercial applications of coal-direct chemical looping continues to make progress. In February 2014, Congressman Griffith commended Professor Fan’s work to representatives from the Department of Energy and NETL at a House Energy and Commerce Committee hearing on clean coal technology.



Zakin wins Dreyfus Senior Scientist funding

The Camille and Henry Dreyfus Foundation’s Senior Scientist Mentor Program award supports emeritus faculty who maintain active research programs with undergraduates. **JACK ZAKIN**, a previous recipient of the award, received a 2014-15 award to carry out undergraduate research on drag reduction.

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MEET THE FACULTY: Bhavik Bakshi on Sustainability



Are electric cars ‘environmentally friendly?’

Most people would say ‘yes,’ but Bhavik Bakshi would answer this question by asking another.

“An electric car doesn’t have tailpipe emissions, that is true; but how is the electricity that runs the car being produced?” he asks.

“Even though an electric car produces no emissions, pollutants of various kinds might result from the power generation facilities and manufacturing and disposal of the batteries used in the cars. So unless the wider ‘ecosystem’ of a problem is taken into account, the impact might only be shifted to another area,” Bakshi explained.

“This is a problem that we have seen. Engineers may develop a more efficient technology to achieve a certain goal, but it ends up being only one aspect of a larger problem.

“To solve the complex problems of our day, an interdisciplinary approach is needed. The solutions to the most challenging problems lay at the intersection of disciplines.

“‘Sustainability’ refers to the fact that to sustain human activities, we need things from nature – ecosystem goods and services ranging from raw materials to pollination and aesthetic nurturance. Sustainability engineering involves multi-dimensional problem-solving, the goal of which is to satisfy human needs without degrading the ecological systems that sustain us.

“As such, my work cuts across disciplinary boundaries. It takes a ‘systems’ view that assesses the broader impact of technologies across their life cycle and across disciplines, using hard data. The approach we developed, which accounts for the direct and indirect dependence of human activities on ecosystems, is called Ecologically-based Life Cycle Assessment (Eco-LCA). In

addition to accounting for resources like water and fossil fuels, a unique contribution of this model is its ability to account for the role of the biogeochemical cycles of carbon and nitrogen in supporting economic activities. This has advanced the concepts of carbon and nitrogen footprints. The model is available as user-friendly software at <http://resilience.osu.edu/ecolca/>, and has been used to compare the life cycle impacts of transportation fuels from fossils and biomass.

“We are also developing methods to help establish synergies between industrial processes and ecological systems. For example, industrial activity can provide resources to a wetland or forest ecosystem, while these ecosystems provide clean water and biofuel to industry, services such as flood and air quality regulation, and recreational opportunities to society. By seeking such ‘eco-synergies,’ we can identify innovative ways of encouraging human activities to stay within nature’s carrying capacity. This work has been applied to problems of industrial interest, and to develop strategies for enhancing the sustainability of the OSU campus,” Bakshi said.

Professor Bakshi has been active in sustainable engineering research since 1999, making him one of the earliest pioneers in the field. In addition to receiving the NSF Early Career Enhancement Award, Bakshi won the 2012 AIChE Research Excellence in Sustainable Engineering Award for innovation in sustainable engineering.



ALUMNI REMINISCE, PART I: Joe Koffolt Memories

“I knew Dr. Joe Koffolt quite well. I will not soon forget that half cigar in the corner of his mouth, the rumpled suit with the little pat of chalk dust and always crooked tie, the constant smile on his face, and the profound knowledge, at which he was so adept, involving all the Unit Operations: fluid flow, distillation, solvent extraction, filtration, drying, evaporation, heat transfer and several others. He was expert at all of it and knew how to teach each of these subjects.

“Joe was a brilliant teacher who would work with you in late hours to assure the difficult detail he was teaching was completely understood. His most proud moments would come when he realized you also knew the subject.

“Somehow Joe made you feel that he was honored to be in your presence when quite the reverse was true. He called his students ‘Jewels’ and he actually thought of us in that light. I was not one of his better students, as I worked from 4-12 at Capital City Products as chief chemist, with not quite enough time for study. Those were difficult years; Joe was a strong influence in my continuation to graduation in the ChemE program, which to this day I consider my most important and valuable accomplishment.

“Many of the major corporations from all over the country had important staff who were ‘Koffolt Jewels.’ They waited anxiously for our graduation and bid on hiring us. Every graduate of the Koffolt era had three to five job offers waiting if they wanted them; he was that well loved and held in that high regard. I had job offers from General Electric, Solvay Division of Allied Chemical, Podbielniak in Chicago, and could have had more if I wanted to keep interviewing.

“I am so very pleased the new Chemical and Biomolecular Engineering building will continue to honor him as the ‘Koffolt Laboratories.’ So very appropriate to the man all of his ‘Jewels’ remember so well.”

--**Graydon Clyde Bazell**, '53, Founder, Bazell Associates, Inc., Walnut Creek, CA.

“I have fond memories of Dr. Koffolt and his ability to remember names. My wife was amazed that he even remembered the names of the students’ girlfriends.

“I first met Dr. Koffolt during the fall of my sophomore year. Transferring into chemical engineering, I needed his approval. Upon meeting him, he asked my name. In response he said, ‘You must be Charlie Parkinson’s boy.’

“My father passed when I was three, so I knew little about him. I later learned that he graduated in ChemE in 1913. Unfortunately, I never inquired from Dr. Koffolt how he knew my Dad. I have always assumed they met when they installed continuous evaporators at the Ohio Salt Company, where my Dad was superintendent.”

--**John R. Parkinson**, '51, Retired, Parkinson & Associates, Vancouver, WA.



Joe Koffolt in his then-new office in old Koffolt Labs. Numerous pictures of alumni are on the wall behind him.

ALUMNI REMINISCE, PART II: Memories of Slip Slider

“I have some stories about Slip Slider that speak to his likeability and concern for others. I was 12 years old in 1955 when my parents purchased their first home for \$12,000 in Worthington, Ohio. Slip Slider lived across the street. The Slider family found out that I was just old enough to make a perfect baby sitter for their children. At that time, baby sitters were paid approximately 50 cents per hour. I continued to baby sit for the Slider family until I graduated from Worthington High School, and over the years, I and my family became good friends with the Sliders.

“Speaking of Slip’s concern for others, I got a date for the Junior/Senior Prom. When I asked my father if I could use the family car for the dance he said, ‘No!’ I got the idea of asking if I could use Slip’s car. When I called Slip, he said, ‘Yes, that would be great and we will have the car cleaned for you.’ When I told my father, he got mad, then embarrassed, and then decided to let me use the family car. When I called Slip to cancel the use of his car, I think he had a little chuckle as if he knew what would happen.

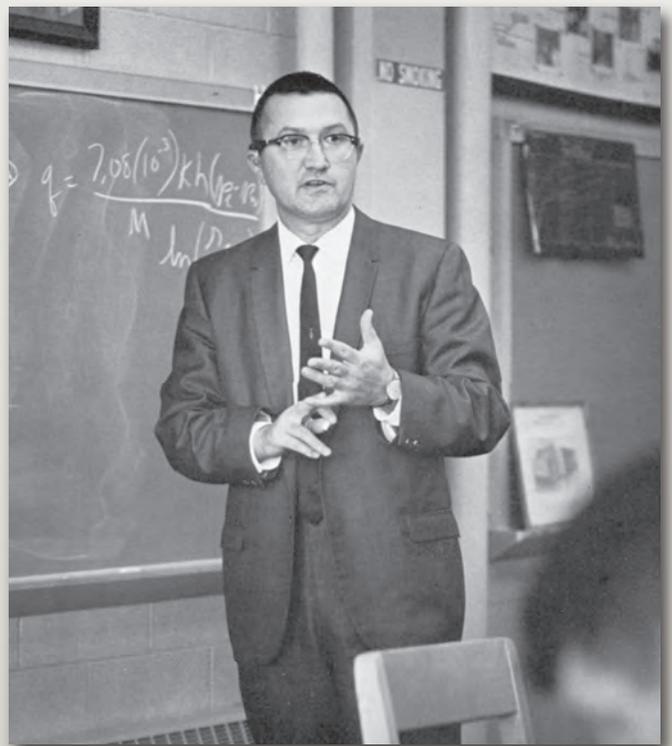
“When the Science Fair was planned at Worthington High School, I went to Slip and asked his thoughts about a possible project. He popped up and said he had a great idea. It was how to determine the total oil in a core sample. I agreed. Next thing I knew Slip brought home all the equipment from Ohio State to test the core samples he provided. He explained how to set up the equipment, how to perform the test, and how to make the calculations. The judges at the Science Fair wanted new ideas rather than an explanation of old sciences. While the judges had one opinion, the general public was extremely interested and wanted to see how the oil was extracted from the core sample. The demonstration was requested many times during the science fair. Most people thought oil was in big pools under ground and not in porous rock.

“When Slip found out I was going into engineering at Ohio State, I spent hours listening to him explaining the benefits of getting a degree in petroleum engineering. Very few colleges, if any, offered petroleum engineering degrees. The classes were small, and the graduates were in great demand, high salaries, as well as quick advancement within an organization. I explained to Slip that chemistry was very difficult for me. Slip kept trying to sell me on petroleum engineering saying I could easily handle the chemistry. The sales pitches kept coming up until we had

to declare our field of study in the second year of the five-year Ohio State engineering program.

“While having a successful career with my industrial engineering degree, I have thought many times over the years about the opportunity that I missed by not taking Slip’s advice. If I could go back in time, I would have taken Slip’s advice and become a petroleum engineer. Although, maybe my decision was correct because Bill Lowrie would not have liked the competition. Bill, congratulation on your award. I am sure that Slip’s advice guided many of us through life. Slip was a great friend and is missed by all who knew him.”

—**James A. Wolfe**, ‘66 BIE, Retired, Wolfe Safety & Security Systems, Des Plaines, IL.



H.C. “Slip” Slider, who received his bachelor’s and master’s degrees in mining engineering at The Ohio State University in 1949 and joined the ChemE faculty in 1956 and became an emeritus in 1983, is still fondly remembered by many former students. Slider was **William G. Lowrie’s** former professor and mentor. To honor his memory, Lowrie established the H.C. Slip Slider Professorship, which supports an untenured faculty member, providing funds for education and research initiatives.

ALUMNI RECEIVE AWARDS



Bill Lowrie Recognized for Distinguished Service

Alumni can ‘give back’ in many ways, but one of the most valuable and significant gifts an institution can receive from its alumni is the precious gift of their time and talent.

In recognition of this fact, in 1952 The Ohio State University Board of Trustees created the Distinguished Service Award, and CBE was thrilled to learn that our own **William G. Lowrie**, ‘66, was recognized for his exceptional and distinguished service to the university.

Early in his career, Bill vowed to ‘give back’ to others what he felt he had received at CBE. Despite living far from campus and balancing a demanding career as CEO of a multinational corporation, Bill found ways to serve his alma mater. His numerous volunteer activities include serving as a charter member of the Chemical Engineering Advisory Committee (and chairman from 1990-98). He played a pivotal role in bringing the dream of a new building for Koffolt Labs to fruition, chairing the national fundraising committee which has a goal of raising \$17.5M towards its cost.

Bill’s extensive service, involvement, and financial support of the chemical engineering department led to it becoming the first named department on The Ohio State University campus. The William G. Lowrie Department of Chemical Engineering has been strengthened enormously as a result of Bill’s involvement.

Congratulations, Bill! We know that this would have really pleased Slip Slider and Joe Koffolt.



Professor Emeritus **Robert S. Brodkey** jokes with his former student, **Bill Lowrie**, at a dinner in celebration of Lowrie’s award. --Photo by Geoff Hulse.



Schwarz Earns Distinguished Alumnus Award

Richard Schwarz, ‘73, is a successful entrepreneur, executive, and investment manager who has held senior management positions in manufacturing, distribution, and chemicals. He is a former company president and co-founder of two companies, and currently serves as a limited partner of Edgewater Capital Partners. The Distinguished Alumnus award recognizes distinguished achievement in one’s profession. Congratulations!



Spitznogle Garners Texnikoi Alumni Award

Each year, the membership of Texnikoi selects one of the younger alumni from the College of Engineering for the Texnikoi Award, which recognizes leadership, integrity, and achievement. **Gary Spitznogle**, ‘98, vice president of regulatory & finance for AEP Ohio, was chosen this year. Gary joined AEP in 1997 as an environmental technician, and now provides organizational leadership to AEP Ohio’s financial and regulatory strategic plans, including investments. Congratulations!

CBE ALUMNI ADVISORY BOARD

Board Anticipates Revitalization

CBE benefited from the input of **Rich Brandon, Ron Harris, Karen Murphy, Drew Weber, Mike Winfield,** and **Leonore Witchey-Lakshmanan** in attendance at the April 11, 2014 CBE Advisory Board meeting.

Chair Stuart Cooper began the meeting with lots of great news: **Bill Lowrie** won the University Distinguished Service Award; two CBE students received prestigious scholarships - one was named a Goldwater Scholar, and the other, a Fulbright; and the department's ranking in U.S. News & World Report had risen from #29 to #23!

New faculty **Nicholas Brunelli**, who was recently published in *Nature Communications* and *Science* magazine, gave a short overview of his research, which involves creating uniform coating on the inside of hollow fiber nanotubes. This is of interest to Phillips 66 and other companies that use similar nanomaterials.

Next, the college data analysis specialist, Barbara Holt, described how rankings are derived for both colleges and departments. An interesting statistic is that if CBE were a college, it would rank highest of all College of Engineering departments. Understanding how rankings are derived gave the Board ideas on ways to possibly increase them.

During the Freshman Engineering Honors Students program panel that followed, professors **David Tomasko** and **Deb Gryzbowski** engaged undergrads **Radhika Madhavan** and **Natasha Khawaja** in a

discussion about what helps retain top students.

After lunch, the group heard from undergrads **Alex Claytor, Ale Garcia-Fuentes, Kate Raftery,** and **Mark Villarreal** on subjects such as class-size and its effect on the “family” feeling, diversity, learning soft skills, and closed vs. open-book exams.

The group also discussed a possible reorganization/development of the Board to create more opportunities for board members to be effective on behalf of CBE.



--Photo by Geoff Hulse.

L-R: Advisory Board members **Rich Brandon, Mike Winfield, Leonore Witchey-Lakshmanan, Ron Harris, Karen Murphy,** and **Drew Weber** stand in front of the new building. The tower on the right contains offices for theory faculty and their students. The third floor contains the departmental offices, while the sixth floor is a student lounge. The four-story building on the left houses research laboratories for Chemical Engineering and Chemistry.

NATIONAL CAMPAIGN COMMITTEE

Koffolt Labs Campaign Committee in Home Stretch of Campaign



On April 25, 2014, Koffolt Committee members (L-R) **Stuart Cooper**, **Bill Lowrie**, **Tom Koffolt**, **Dennis Hurley**, **Mike Winfield**, and Director of Development **Jessica Schmitt** met to review fund raising progress for the new building.

Bill Lowrie chaired the meeting, which included an overview from Stuart Cooper and a construction update by University Facilities' Faye Bodyke. Construction is on schedule and within budget, and the ribbon-cutting is expected to be held on April 10th.

New Senior Director of Strategic Engagement and Alumni Relations for the College of Engineering **Chad Warren** provided the group with some information regarding statistical giving rates by College of Engineering grads. Currently, 13% of Ohio State engineering grads give annually.

Matt McNair, chief advancement officer for the College of Engineering, and Jessica Schmitt, director of development for CBE, then reviewed strategy for the rest of the campaign.



Chairman **Stuart Cooper** points out features of the new unit operations lab to (L-R) **Dennis Hurley**, **Bill Lowrie**, and **Tom Koffolt**.

--Photos by Geoff Hulse.

ALUMNI UPDATES

James O. Albery, '59, retired in 1998. Albery was a lifelong member of AIChE, a member of Tau Beta Pi and Phi Eta Sigma. He lives in Nederland, TX with spouse JoAnn Albery. The Alberys had three children: Michael, Ruth, and Pamala.

Alana Pevets, '09, has been working in Rio de Janeiro, Brazil, starting up a new Procter & Gamble plant. Alana was previously a process development engineer for Procter & Gamble in Cincinnati.



Katerina ("Kathy") Etimoff Milenkovski, '89, was included in the 2014 list of The Best Lawyers in America. Her practice focuses on energy and environmental law. Her background in chemical engineering and nearly two decades of experience

with air regulations at the state and federal level uniquely positions her in helping corporate clients understand compliance obligations imposed by the the Clean Air Act. Kathy is Of Counsel with the law firm of Steptoe & Johnson PLLC in the firm's Columbus, Ohio office.

IN MEMORIAM

1930s

Joseph W. Catron, '36, Ashland, KY passed away on Christmas Day, 12/25/2013, at age 99 1/2 years. He was a technical service engineer at Ashland Petroleum's Catlettsburg Refinery.

John E. Chenevy, '39, of Houston, TX, passed away 9/15/13.

1940s

Victor A. Betts, '47 MS, Chicago, IL, passed away 7/21/2013. He was an engineer at The Austin Co.

Alvin G. Cooper, '47, Apple Valley, CA, passed away 6/22/2014.

Leroy A. Dunham, '47, Louisville, KY, passed away 1/25/2013

Franklin M. Ernest, '48, Syracuse, NY, passed away 10/31/2013.

Charles H. Horch, '42, Salem, OR, passed away 3/19/2014.

Gordon C. Inskip, '43, Tempe, AZ, passed away 1/19/2014.

Lynn Seeley Kelley, '42, passed away on 8/9/2013 in McLeansville, NC. Kelly had an illustrious career at E.I. DuPont, and greatly valued his degree and education from The Ohio State University.

Harold E. Knowlton, '47 MS/PhD, Walnut Creek, CA, passed away 10/27/2013.

Thomas F. Lavery, '41, Akron, Ohio, passed away 11/7/2013.

Richard Loftfield, '43, Jacksonville, FL, passed away 10/7/2013.

Robert G. McCammon, '48, Elizabeth, PA, passed away 11/16/2013.

John D. Mueller, '49 MS, Baton Rouge, LA, passed away 5/1/2014.

Robert E. Petty, '48, Pittsburgh, PA, passed away 3/10/2014. He was an engineer at Westinghouse.

Douglas O. Robinette, '48, Wilmore, KY, passed away 1/24/2014.

Donald F. Stauffer, '47, West Grove, PA, passed away 2/28/2014. He was presidnet of International Development & Energy Associates, Inc.

Jack A. Wunderle, '48, Westerville, OH, passed away 8/1/2013.

1950s

Charles L. Benford, '55 BS/MS, Toledo, OH, passed away 1/8/2013.

Daren E. Calvin, '50, Vinton, OH, passed away 2/15/2013.

Robert F. Carroll, '51 BS/MS, Lexington, KY, passed away on 3/22/2014.

Clifford N. Click, '57, Tucson, AZ, passed away 8/14/2013.

Clifton W. Cooke, '58, Lincoln, ME, passed away 12/21/2013. He was a senior engineer at DuPont.

Norval P. Davis, '54, Palm Desert, CA, passed away 2/12/2013.

William H. Graves, '50 BS/MS, Ft. Collins, CO, passed away 4/22/2013.

Sung Ho Hong, '57 MS, Neenah, WI, passed away 5/4/2013.

John J. Lavin, '51, Phillipsburg, NJ, passed away 1/26/2014.

Raymond J. Mayfield, '50, BS/MS, Wilmington, DE, passed away 1/17/2914.

Francis E. Smith, '59, Westerville, OH, passed away 4/6/2013.

Richard M. Smith, '58, Newark, DE, passed away 3/13/2013.

David B. Speed, '51 BS/MS, Portland, ME, passed away 3/20/2014.

Bernard Terry, '50 MS/PhD, Clearwater, FL, passed away 8/11/2013.

Robert E. Thompson, '50, Findlay, OH, passed away 2/28/2013.

Louis J. Weisz, '50, Hudson, OH, passed away 5/15/2014.

David Williams, '50, Mentor, OH, passed away 9/18/2013.

William H. Wiseman, '53, Augusta, GA, passed away 9/6/2013.

1960s

James W. Bowers, '61 BS/MS, passed away on 7/20/2013. He was an attorney in NYC.

James F. Nester, '60 BS, '64 MS, Venice, FL, passed away 5/18/2014. He was director of planning at PerkinElmer.

John J. Curran, '69, San Jose, CA, passed away on 2/23/2014. He worked for 5th Screen Digital.

1970s

William 'Bill' G. Clark, '73, passed away on 7/12/2013 in Louisville, KY. He was the owner of Valvoline Instant Oil Change in Lexington, KY.

Luther J. Mills, '73, Delaware, OH, passed away on 6/8/2014. He was a private attorney.

2000s

Peter A. Leatherman, '11, Marysville, OH, passed away on 12/21/2013.

BANHOLZER'S LOWRIE LECTURES OFFER INDUSTRY INSIGHT



William F. Banzholzer

William F. Banzholzer, currently on the faculty in the University of Wisconsin-Madison's departments of chemical engineering and chemistry, and senior scientist at the Wisconsin Energy Institute, spent his entire industrial career translating brilliant inventions into profitable and beneficial products.

Banzholzer retired from Dow Chemical, where he was Dow's chief technology officer and an executive vice president leading Dow's venture capital, new business development, and licensing activities.

He led the R&D efforts of some 7,000 scientists worldwide, yielding new products and successful business ventures in photovoltaics, new composite materials, and energy storage. Under his leadership, the value of Dow's innovation pipeline tripled from \$10B to over \$32B.

He had a 22-year career with General Electric Company (GE) prior to joining Dow, leaving as vice president of global technology at GE Advanced Materials.

For his innovative successes, he was elected in 2002 to the National Academy of Engineering. He received the Holland Award for R&D management from the Industrial Research Institute, the Pruitt Award for his innovative approach to research collaborations from the Council of Chemical Research, the ACS Earl B. Barnes Award, and others.

Lecture 1: Lessons Learned in 30+ Years of Industrial R&D

Scientific research is both exciting and frustrating; it can improve the human condition and create wealth, but it can also end in futility. In this lecture, Banzholzer drew on his personal research experiences in areas as diverse as stealth materials to diamonds synthesis, sharing case studies and perspectives on selecting research topics, applying the proper tools, and determining when to terminate a program. He also discussed the importance of presentation skills and gave advice on career management.

Lecture 2: Possible vs. Practical

There is a strong societal desire for sources of energy and feedstocks that can support a high standard of living for all. Thermodynamic, material, and economic challenges stand in the way, yet most of the general public do not have basic understanding of the energy flows, chemical transformations, and the scale of the systems that support our current way of life. As engineers, we must do a better job at explaining the difference between discoveries that offer truly practical, vs. merely possible, solutions.



Professor **William Banzholzer** receives the Lowrie Lecture Award from Chairman **Stuart Cooper**. --Photo by Geoff Hulse.

OLD KOFFOLT LABS: A “Moving” Story

“When the current chemical engineering building was being constructed in 1959, Joe (Koffolt) decided that he could save the school some money if we students did a lot of the work in dismantling the unit ops equipment, moving it to the new building, and reassembling it. The dismantling and moving took place during the summer quarter of 1959. Normally this was eight or ten weeks of unit ops lab work. We had to compress all the normal curricula into four weeks, and then spend the next four weeks or so dismantling and moving the equipment. We worked alongside the professional contractors who did most of the actual moving of the equipment after we had taken it all apart and placed it on pallets. We were able to do some reassembling in the new building before summer session ended.

“When we returned for the fall quarter, we were broken up into three-man teams and each team was assigned a Unit Ops system to finish assembling, checking out, and starting up. My team was assigned the Triple Effect Evaporator. Although we received advice and some

assistance from the staff, we students had to determine what had to be done, devise a plan to finish the assemblage, prepare a startup and checkout plan, and then do much of the physical labor involved including welding, pipe fitting (sometimes using the overhead crane to maneuver large pieces into place), painting, instrumentation installation, etc. The final phase of our project was to write a team report documenting the startup and checkout experiments we did to commission the system.

“I doubt that any other ChemE class has ever been able to have this unique and valuable experience that our class of 1960 had.”

—**Russell L. Wilt**, '60, Retired Engineer, General Electric, Clifton Park, NY.



Members of the final “Unit Ops” class of 2014 held in Old Koffolt Labs.

--Photo by Geoff Hulse.

END OF AN ERA: CBE Moves Into New Building This Fall

Every summer for the past 50 years, "Unit Operations" was the crucible of chemical engineering education at Ohio State. The program ties together everything that students have learned in the classroom, with hands-on experiments, data analysis and presentations. It's a valuable, unforgettable experience.

The final "Unit Ops" in Old Koffolt is commemorated in this short video:

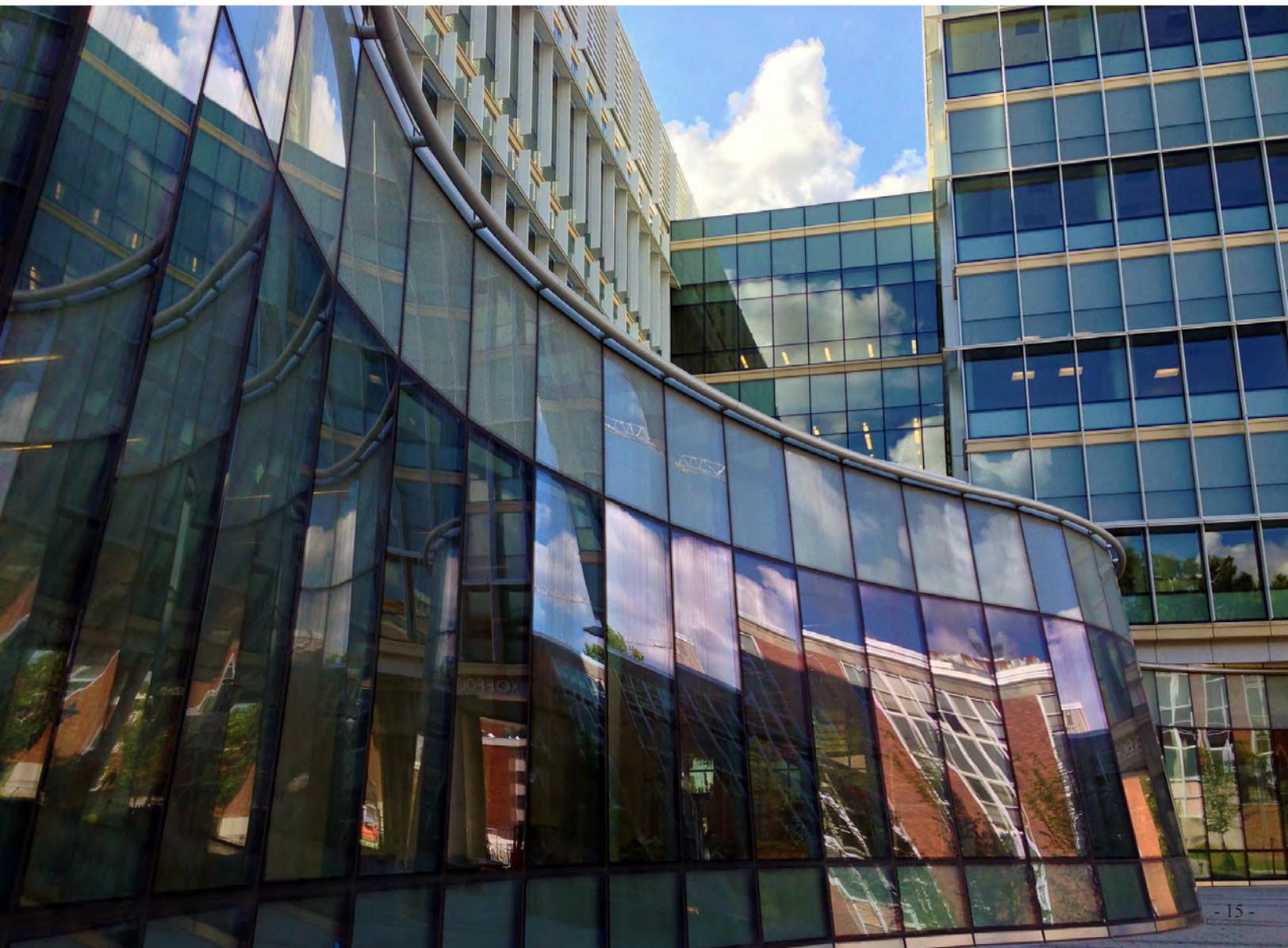
—> <http://go.osu.edu/UnitOps> <—

We know there are a lot of fond memories tied up in Old Koffolt Labs. But as we move into the new building, we are assured of a future bright with equally strong experiences to come, thanks to all of our amazing friends and donors.

"Unit Ops -- what a crazy summer. I remember coming home one morning at 7am after an all nighter, and my mom asking me if all the hard work was worth it. And every year that goes by I realize how much it was so worth it." --**Ginny Northrup**, '85, Program Manager at PolymerOhio., Columbus, OH.

"[Unit Ops was] a big part of my OSU ChemE experience. Whenever I meet an alum we can bond over this shared intense experience, no matter when they graduated. All of it -- the technical challenge, the planning, the long experimental days -- prepared me for doing much of the same in industry. Keep up the good work." --**Rajeev Gorowara**, '86, '88, Research Associate at DuPont, Wilmington, DE.

--Photo by Geoff Hulse.



THE IMPACT OF FACULTY MENTORING: One Student's Story

“Why do you want to become an engineer?”

It seemed a simple enough question, but for CBE undergrad **Bobby Law**, it changed his entire world.

“I had always had an easy time in high school,” Law explained. “I came into engineering with the idea that I could ‘coast,’ he said. “But I found out that wasn’t so.”

Law is not unlike many bright students who underestimate the rigors of college-level engineering courses. Faced with the challenges that engineering studies present, many end up leaving or changing majors if they do not get the proper focus and guidance.

A 2010 University of California-LA study noted a nationwide trend for undergraduates to leave science, technology, engineering and math programs before they graduate with those degrees. This is a concern because many people believe that having sufficient numbers of U.S. engineers helps ensure that America remains financially strong and globally competitive.

Graduating in engineering is good for students, as well. Initial salary offers for CBE grads average in the high \$60s [OSU Engineering Career Services, 2012], and by mid-to-late career, engineering grads can earn more than twice the salaries of other grads [Census data].

At least two things can help students graduate. The first is ensuring that they receive quality academic advising -- and your CBE is proud that one of its own advisors recently received national recognition in this realm (please see the adjacent announcement regarding **Katie Bush-Glenn**'s election as chair of the STEM Advising Commission of the the National Academic Advising Association.).

Another critical factor is faculty coaching and mentoring. In a 2011 study of over 13,000 students from uni-

versities across the U.S., Stanford University Associate Professor Eric Bettinger and doctoral student Rachel Baker found a 10-to 15-percent increase in retention and graduation rates among those in the group coached by faculty.

For Bobby Law, coaching made all the difference.

“Professor **David Wood** sat me down and asked me, very seriously, why I wanted to become an engineer. It really made me think. When I finally realized that my success in school, and ultimately, my whole career was my own responsibility -- and not in the hands of any professor or program -- everything changed,” Law said.

“Professor Wood taught me the values of hard work, discipline, and delayed gratification,” Law added. “It was the most pivotal turning point of my very existence. I learned to challenge myself and strive for seemingly unattainable goals. Under his tutelage, my life took on a new meaning and purpose. And when I asked Professor Wood about his research, I discovered a new passion in biopharmaceuticals,” Law said.

This has proven to be a fortuitous match. Wood took Law on in his research lab, and after demonstrating productivity, Law was selected for a prestigious summer internship at Genentech, a subsidiary of Roche Pharmaceuticals, which is the largest biotech firm in the world. He also participated in a seminar at MIT.

“My story is just one of what must be countless others,” Law said, “but I can say, without question, that David Wood is the reason I graduated as a chemical and biomolecular engineer,” Law concluded.

“No single person has been more responsible for turning my life around than Dr. David Wood.”

--Bobby Law, '14



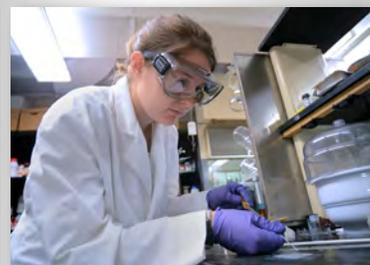
Bobby Law, who graduated with distinction in Spring 2014, at his San Francisco internship site -- the U.S. headquarters of Roche Pharmaceuticals.

CBE IN THE NATIONAL SPOTLIGHT: Scholarships and More



Goldwater Scholar **Joseph Gauthier**.
--Photo by Geoff Hulse.

Joseph Gauthier, a junior CBE honors student, was named a Barry M. Goldwater Scholar last spring. Joe is conducting studies with Kurt Koelling in rheology of fluids used in hydraulic fracturing. His thesis examines the use of environmentally detrimental chemicals in fracking fluids and proposes a more eco-friendly alternative. His work resulted in a co-authored paper in the TA Instruments Applications Library. Joe plans to obtain a PhD in ChemE and pursue a career as a professor in polymer fluid mechanics.



Fulbright Scholar **Anna Dorfi**.
--Photo by Geoff Hulse.

Anna Dorfi, '14, who came to Ohio State on a Morrill Scholarship as a Distinction Scholar, worked in Yiying Wu's lab (Chemistry) developing more efficient solar cells. This year, she will be conducting studies in Mainz, Germany at the Johannes Gutenberg Universitat with Professor A.K. Tremel as a Fulbright Scholar. She will be developing superconducting materials for better energy conversion in electronics. Afterwards, Anna hopes to attend graduate school in chemical engineering. "ChemE is a great basis for anything else I'd want to pursue," she said.

CBE Advisor Elected to Board



Academic Advisor **Katie Bush-Glenn**, who joined CBE in August 2012, was recognized by her peers in being elected to a leadership position within the

National Academic Advising Association (NADADA), which represents the global community for academic learning and promotes quality academic advising and professional development for its members.

The impact of advising on student satisfaction and retention is well documented, and part of NACADA's mission is to help ensure that effective academic advising is at the core of student success.

Bush-Glenn will hold the post of STEM Advising Commission Chair, and attend national NACADA meetings at its Manhattan, KS headquarters at Kansas State University.

Winter's Students Attend Intel ISEF



Students working in **Jessica Winter's** lab were excited to learn that they had qualified for the 2014 Intel International Science and Engineering Fair.

High school students **Spandan Shah** and **Ryan Huston** traveled to Los Angeles last May to present their research at Intel's fair, which is the world's largest international pre-college science competition, providing an annual forum for more than 1,700 high school students from over 70 countries.

Shah and Huston were partially supported in Winter's lab by the Nanoscale Science and Engineering Center and the College of Engineering.

HONORS AND AWARDS

SPECIAL RECOGNITION

Katja Binkley: NSF-funded Partnership in International Research and Education (PIRE) Fellowship to attend the 10th Congress on Catalysis, applied to Fine Chemicals and the PIRE Summer School in Turku, Finland (Summer 2013).

Deepika Singh: Kokes Award, North American Catalysis Society meeting (June 2013), and an AIChE Catalysis and Reaction Engineering (CRE) Division Travel Award (November 2013).

Ilgaz Soykal: Kokes Award, North American Catalysis Society meeting (June 2013).

Lin Zhao: Second Place Poster Presentation Award at the Fuel Cell Seminar & Energy Exposition, Columbus, OH (October 2013) for his poster, CO₂-Selective Membranes for H₂ Purification for Fuel Cells.



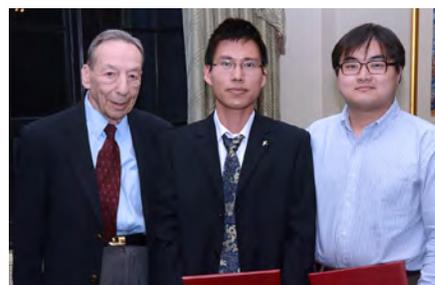
Katja Binkley, Deepika Singh, and Lin Zhao. Not pictured: **Ilgaz Soykal.**

AMERICAN INSTITUTE OF CHEMISTS FOUNDATION AWARDS

AIC Outstanding Undergraduate Student Award - **Brian J. Mog** (Advisor: L.J. Lee)

AIC Outstanding Graduate Student Award - **Xi Zhao** (Advisor: L.J. Lee)

AIC Outstanding Postdoctoral Award - **Qiang Zhou** (Advisor: L.S. Fan)



Dr. Jack Zakin (L), presents the AIC Foundation Awards to **Qiang Zhou** and **Xi Zhao**. Not pictured: **Brian Mog.**

AIChE STUDENT AWARDS

AIChE Central Ohio Section Outstanding Student Award -

Scott D. Hochberg

Donald F. Othmer AIChE

Sophomore Academic Excellence Award -

Joshua B. Colley



Dr. Aravind Asthagiri presents the AIChE Student Awards to **Scott Hochberg** and **Joshua Colley**.

DENMAN UNDERGRADUATE RESEARCH FORUM AWARDS

Robert Battista, second place

Anna Dorfi, second place

Nicholas Blum, third place



Dr. David Tomasko (L) with Denman Research Forum winners **Anna Dorfi** and **Robert Battista**. Anna Dorfi won a Fulbright to study in Germany last summer. Not pictured: **Nick Blum**.

AIChE STUDENT CHAPTER OFFICERS

President: **Robert Warburton**;

Vice President: **Shaista Mallik**;

Treasurer: **Hussein Alkhatib**;

Social Chair: **Mike Mospens**;

Philanthropy Chair: **Nicole**

Pangilinan;

Webmaster: **Parth Patel**;

Senior Class Rep: **Phil Kester**;

Junior Class Rep: **Chris Miehl**;

Sophomore Class Rep: **Mitch**

Anderskow.

(Advisor: A. Asthagiri)



Dr. Aravind Asthagiri (L) with AIChE officers **Phil Kester** and **Robert Warburton**.

CHEM E CAR OFFICERS (not pictured):

President: **Gabrielle Vasquez**; Treasurer: **William "Billy" Blincoe**; Power

Team Leader: **Angela Chen**; Timing Mechanism Team Leader: **Ziwei**

Wang; Safety Leader: **Gar Wai Guan**. (Advisor: D. Tomasko)

CBE DEPARTMENT AWARDS



OUTSTANDING UNDERGRADUATE AWARD FOR RESEARCH EXCELLENCE:

Nicholas Blum (L.S. Fan); **Joseph Ionni** (J. Zakin); **Angela Chen** (D. Wood); **Jack Davis** (U. Ozkan); **Joshua Fouasnon** (L. Hall); **Philip Kester** (U. Ozkan); **Nicholas Justus** (L.S. Fan); **Dr. Nicholas Brunelli**; **Olivia Wetta** (J. Winter); **Robert Law** (D. Wood); **Robert Warburton** (A. Asthagiri).



OUTSTANDING GRADUATE AWARD FOR ACADEMIC ACHIEVEMENT:

Dr. Umit Ozkan and (back row): **Jie Dong**, **Lin Zhao**, **Daniel Knight**, **Le Yu**; (front row): **Yuanxin Chen**, **Wenyan Jiang**, **Anshuman Fuller**, **Fangfang Liu**, **Mengmeng Xu**, **Siaorui Yang**.

OUTSTANDING POST-DOC AWARD FOR RESEARCH EXCELLENCE (not pictured): **Chich-Chin Chen**, **Daniel Gallego-Perez**, **Meng Lin**, **Xinmei Wang**.



CEGC OFFICERS (Chemical Engineering Graduate Council)

Left to Right: **Dr. David Wood**
 Business Officer: **Andy Maxson**
 Recruitment Officer: **Katja Binkley**
 Facilities Officer: **Varsha Gopalakrishnan**
 Social Officer: **Matt Souva**
 Academic Officer: **Prasant Vijayaraghavan**.



GRADUATE RESEARCH SYMPOSIUM

Dr. David Wood, **Elif Miskioglu**, **Matt Gallovic**, **Hrishikesh Munj**, **Niranjani Deshpande**, **Ankita Majumdar**, **Sumant Patankar**, **Varsha Gopalakrishnan**, Graduate Advisor **Angela Bennett**. Not pictured: **Viraj Modak**.

--Awards photos by Geoff Hulse.



JOIN US

for the next

Graduate Research Symposium

September 22, 2014

@ The Blackwell on Campus



Dr. Winston Ho listens as Hrishikesh Munj discusses carbon dioxide-assisted impregnation of additives in polymers.

--Photo by Jeevan Baretto, '14.

The Third Annual Graduate Research Symposium is gearing up for another all-day event. Students, alumni and industry representatives will be treated to networking opportunities and showcase presentations about the cutting-edge research going on at CBE.

Keynote speaker **Mike Dickens**, general manager of identity management at Battelle Memorial, is excited to share some valuable words of wisdom gleaned from his professional experiences.

The all-day symposium, which is organized by graduate students within the department, is sponsored by the Dow Chemical Company.

Last-year attendee **Tom Burns**, '83, '85 (Director, Dow Chemical): "I thought the overall quality of the presentations, posters, and research were very good. I like the way the event was organized and I thought the venue was outstanding."

R. Scott Osborne (CoE Research Operations), said: "I thought it was an excellent, first-class event...very good and the posters were first-rate. I honestly have no suggestions for improvement."

For more info, please visit: <http://go.osu.edu/symposium>

2013-14 CBE Student Facts

Undergrads: 930

29% women, 9% minority. 161 students got departmental scholarships.

Grad Students: 80 PhDs, 5 Master's.

(31% women, 6% ethnic minority).

Number of degrees conferred in 2013-14:

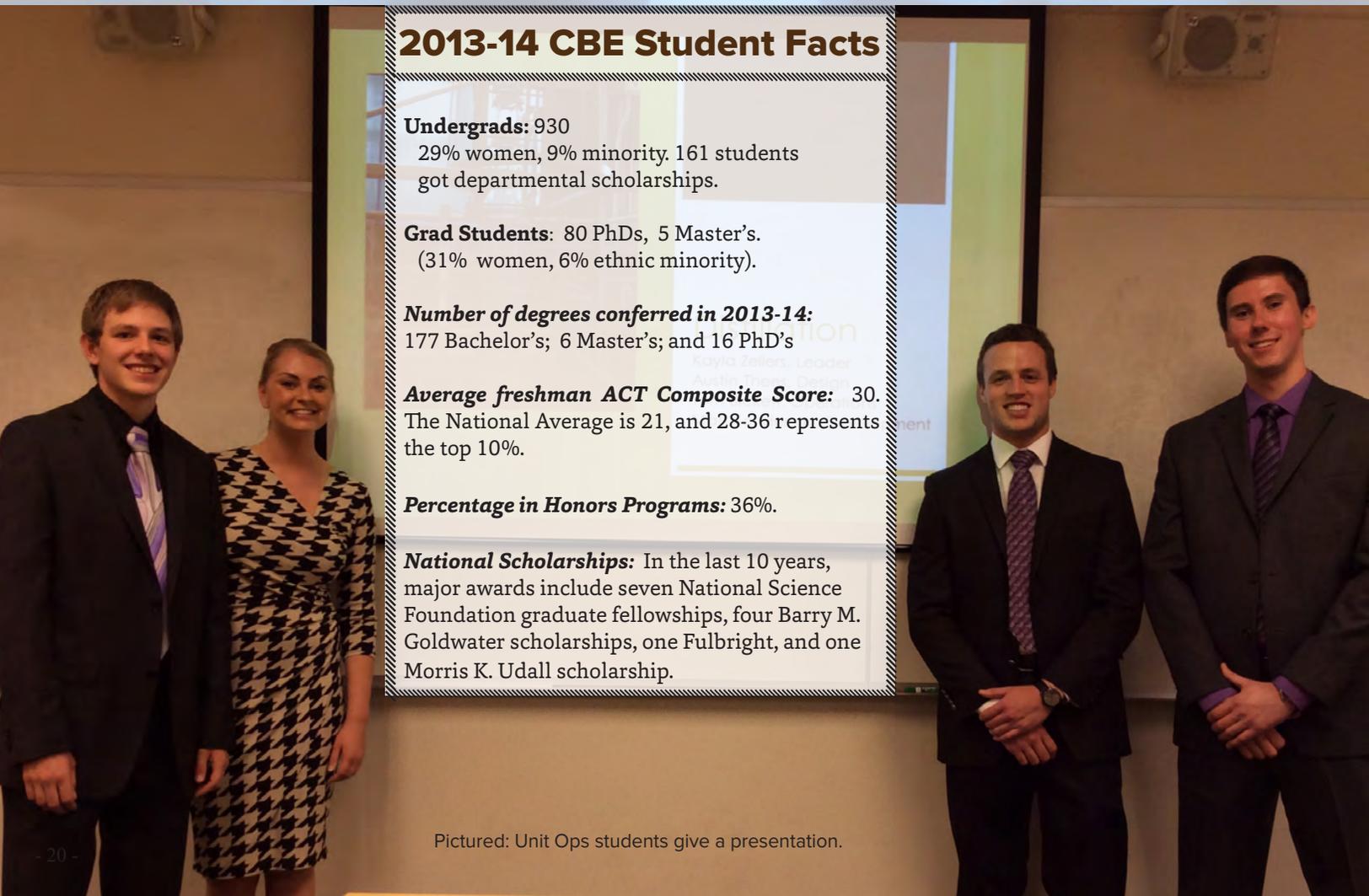
177 Bachelor's; 6 Master's; and 16 PhD's

Average freshman ACT Composite Score: 30.

The National Average is 21, and 28-36 represents the top 10%.

Percentage in Honors Programs: 36%.

National Scholarships: In the last 10 years, major awards include seven National Science Foundation graduate fellowships, four Barry M. Goldwater scholarships, one Fulbright, and one Morris K. Udall scholarship.



Pictured: Unit Ops students give a presentation.

BUT FOR OHIO STATE

Responsibility. Discipline. Confidence...

...Teamwork. Work ethic. Integrity.

These are the words that former students have used to describe what the William G. Lowrie “CBE Experience” means to them.

What does it mean to you?

Thanks to our students, faculty, and alumni, CBE is a top program that attracts acclaimed faculty and talented, highly motivated students. If you are a CBE alumnus, you likely recognize yourself in that description. You loved a challenge, and you had a dream. You wanted to solve problems and make a difference in the world. And like as not, you did just that; perhaps with a bit of help along the way. But for Ohio State, none of this might have happened.

It starts with the education and values that students gain while going through such a rigorous program. You can't put a price on Responsibility, Discipline, or Confidence. You can't quantify the value of Teamwork, a strong Work Ethic, or Integrity. And yet, this is what your philanthropy “buys” when you help the people and programs of CBE.

We invite you to join in this noble cause. Take a moment to imagine what it would be like to help launch the career of a student whose dreams and aspirations are much like the ones you had, starting out? Or to see first-hand the societal impact of a faculty member's game-changing research? Every gift counts, and making an impact on CBE is even easier when you spread a gift out over several years. You could also join with other classmates to make a collective gift, or remember CBE in your estate. Thank you for remembering your CBE! It really does matter.

I would like to support CBE in the amount of \$50 \$100 \$250 \$500 \$1000 \$2500 \$_____.

My gift is for: General Fund 302693 Jewels Club 310335 Koffolt Labs New Building 310614

Name _____

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Charge: __ Visa __ Mastercard __ Discover AmEx

Name on Card _____

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Expiration Date _____

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Foundation, P.O. Box 710811, Columbus, OH 43271-0811.

Online: giveto.osu.edu/makeagift

My company makes matching gifts. (To see if it does,
click on “Matching Gifts” at the above website.)

Share your news!

Name _____ **Year(s)/Degree(s)/Major(s)** _____

Title/Employer _____ **Year retired** _____

Spouse _____ **Year(s)/Degree(s)/Major(s)** _____

Title/Employer _____ **Year retired** _____

Address _____

City _____ **State** _____ **Zip** _____

Children (if OSU grads, please include year/degree) _____

Your Career Highlights (History, News, Special Achievements, Awards) _____

Professional Boards _____

Social Clubs/Organizations _____

Non-profit/Community work _____

Personal Interests/Activities of Interest _____

CBE: What does it mean to YOU? Favorite memories etc. _____

Please return in the provided envelope. Feel free to attach additional pages.

Blast from the Past



Guests in the old Unit Ops space attending the 1959 ribbon-cutting of Old Koffolt Labs when it was new. Professor Emeritus **Bob Brodkey** (below the yellow arrow), who is still active in Koffolt Labs today, was in attendance!



GOT CLEAN AIR? L.-S. Fan's Pilot Scale Syngas Chemical Looping Demonstration Unit Makes Progress

L.-S. Fan's syngas chemical looping (SCL) pilot plant project demonstrates how chemical looping technology can be used to efficiently cogenerate electricity and hydrogen from carbonaceous fuels such as shale gas and synthesis gas with zero carbon emissions. The project has received financial support from the Department of Energy's (DOE) Advanced Research Projects Agency – Energy (ARPA-E), the Ohio Development Services Agency, and multiple industrial collaborators and continues making progress towards potential commercial implementation to reduce carbon emissions. See his amazing work in this great video: <http://go.osu.edu/InsideScience>

Get ChEnnected!

Website: cbe.osu.edu

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"Ohio State Chemical Engineering Alumni and Friends"

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YouTube: go.osu.edu/CBEyoutube