



Eric Aston
Department
Chair

LETTER FROM THE CHAIR

Dear Alumni, Students, Friends and Families,

As we officially welcome our two newest faculty this year, we are also phasing into two planned retirements (Professors Dean Edwards and David Drown) as we have come to a major change-point for our department. We have more Assistant Professors (7) on the tenure-track now than full-time tenured faculty (6), and the current administration is pointing us in the direction of becoming a Carnegie highest research activity institution (R1). Our goal is ever toward high quality of teaching and research in service to our main constituency—current and future students.

We also lost two legends of our Chemical Engineering program this summer: Professors Emeriti Jay Scheldorf and Lou Edwards, with over 90 years of combined university teaching. As we do our best to plan for the future of our department, I hope that we will regularly look behind us to keep learning from the ones who kept our programs going through the inevitable ups and downs of education.

We have a large and vital senior class this year with many top-notch students ready to graduate this Spring. Thank you all for your support over the years and for taking the time to catch up with us here and whenever we see you next.
-Eric Aston

Please update your contact information with us at che@uidaho.edu or mse@uidaho.edu.

NEW FACULTY FALL 2016 – JOIN US IN WELCOMING:



Dr. Matthew Bernards

Dr. Matthew Bernards joined the Department of Chemical and Materials Engineering as an Assistant Professor in the summer of 2016. Prior to joining the University of Idaho, Dr. Bernards served as an Assistant Professor of Chemical Engineering at the University of Missouri, where he also held appointments in the Nuclear Engineering Program and Bioengineering Department. He graduated with his Ph.D. in Chemical Engineering and Nanotechnology from the University of Washington in 2008. Dr. Bernards' research group is focused on multiple aspects of materials science and engineering. One aspect of his research group is focused on understanding the interactions that occur between biological entities and material interfaces and using this knowledge to design biomaterials that facilitate healing at the molecular level. Another aspect of his research group is focused on developing micro- and nano-scale power generation systems based on nuclear energy. He is excited to return to the Pacific Northwest and is joined here by his wife and two children.



Dr. Gautam Kumar

Dr. Gautam Kumar joins the Chemical and Materials Engineering Department as an Assistant Professor with expertise in modeling, optimization, control. He obtained Chemical Engineering degrees from Indian Institute of Technology, Kanpur (B.Tech.) and Lehigh University (M.S., Ph.D.). Prior to joining the University of Idaho, he was a Postdoctoral Research Associate in the Electrical Engineering Department at Washington University in St. Louis where he worked towards understanding brain dynamics using control-theoretic approaches. At the University of Idaho, his research spans the areas of optimal control, stochastic systems, computational neuroscience and computational psychiatry with an emphasis on neurological and neuropsychiatric disorders such as epilepsy and major depressive disorders.
gkumar@uidaho.edu

GOLDWATER SCHOLAR

Alyssa Ertel, a senior in Chemical Engineering, double majoring in Chemistry and an Honors student received the prestigious Goldwater Scholarship for 2016-17. When awarded last spring, Alyssa said "Becoming a Goldwater Scholar became a dream of mine when I realized that I could make a difference through research. It's truly an honor, and I feel incredibly lucky to be surrounded by faculty members and peers that encouraged and inspired me to achieve my goals." These scholarships were awarded to 252 students of over 1,150 nominees nationally, selected on the basis of academic merit. One- and two-year scholarships cover the cost of tuition, fees, books, and room & board, up to \$7,500/year. Last year, Alyssa was president of UI's Society of Women Engineers Chapter and a member of the DeVlieg innovation design team that present at the Design Expo. She is from Kennewick, WA.



Alyssa Ertel

TENURE & PROMOTION



Congratulations to Krishnan Raja! He has been granted tenure and promoted to Associate Professor in Chemical and Materials Engineering beginning in FY17. ksraja@uidaho.edu

RESEARCH HIGHLIGHTS

Faculty: "Nuclear Safeguards Curriculum Development Workshop for Sub-Saharan Africa" DOE, National Nuclear Security Administration through a contract with Argonne National Laboratory. Matthew Bernards (PI) Total funding \$7500

"Micro-Scale Technique to Evaluate Grain Boundary Cohesion of Irradiated Alloys", Battelle Energy Alliance LLC, Indrajit Charit (PI) Total Funding \$49,996.

"A Science Based Approach for Selecting Dopants in FCCI-Resistant Metallic Fuel Systems" DOE (Office of Nuclear Energy), NEUP, Indrajit Charit (PI), Samrat Choudhury (Co-PI) UI; R. Mariani and M. Benson (Co-PI's) INL. Total funding \$800,000 (\$640,000 UI and \$160,000 INL)

"Advanced Electrochemical Separations fo Actinide/Fission Products via the control of Nucleation and Growth of Electrodeposits". DOE, NEUP Batric Pesic (PI). Total funding \$350,000.

"A Passive Magnetized Metal Removal System Utilizing Functionalized Nanoparticles for Initial Treatment of Seasonal Acid Rock Drainage: New Technology for enhancing Passive Treatment Systems". OSMRE (Office of Surface Mining Reclamation and Enforcement). James Moberly (PI) Total funding \$272,090.

Students The UI Office of Undergraduate Research Office awards grants (OUR) that will fund materials and supplies, project-related travel expenses, etc., up to \$1,000 both in the spring and fall. Last spring we had two students awarded an OUR grant. Jieun Lee, Ch.E. and Brady Rinaldi, Ch.E.. This fall four of our students received the award: Jesse Hinshaw, Ch.E., Andrea Mansfeld, Ch.E., Emily Tesnohlidek, Ch.E. and Jacob Kline, MSE.

The OUR office also has a SURF (Summer Undergraduate Research Fellowship) award. In summer of 2016 three of our students received awards: Andrea Mansfeld, Ch.E, Amey Shigrekar, Ch.E. and Sam Wolfe, Ch.E.

Margaret Fitzgerald, MSE, was awarded funding from Management of Idaho's Landscapes for Ecosystem Services (MILES) Undergraduate Research and Internship (MURI) Program for the academic year.

Ch.E. M.S. THESIS DEFENSE TITLES:

Ezekiel Adekanmbi, *Applications of Electrokinetics for Disease Diagnostics*

Kirsten Hillyer, *Bioremediation of Trichloroethylene by Use of Polymer Bio-beads and Quantification of Diffusion of Trichloroethylene through Various Polymer Membranes*

Kevin Lyon, *Separation of Adjacent Rare Earth Elements Using Solvent Extraction*

Isaac Skavdahl, *Analysis of Transients and Control of Advanced High Temperature Reactor-Coupled Heat Exchangers System*

Theodore Warner, *Phosphate Ore Pre-Reaction With Acidic Process Water*

Thank you to all who provided us with support. We could not have done it without you!

EXPECTED TO GRADUATE 2016-17:

B.S. Ch.E.

Nayef Alazemi
Zachary Beaman
Jonathan Bessler
Jacob Bonwell
Sheila Briggs
Connor Chapek
Kevin Christopher
Mattie Cupps

James Daschel
Taylor Davis
Ashley DeBie
Alyssa Ertel
Talal Hamadah
Konrad Hausman
Quenton Heath
Jesse Hinshaw
Kyle Hubbell

Erin Johnson
Nicolas Johnson
Brett McKinnon
Patrick Mahoney
Lorraine Mottishaw
Benjamin Plaster
Scott Ramsdell
William Reichlinger
Emily Tesnohlidek
Elli Tindall
E. David Vanegas-Lytle

Samuel Wolfe
Trevor Woodland
M.S. Ch.E.
Bennett Carv
Rachel Peterson
Theodore Warner
B.S. M.S.E.
Benjamin Bjornson
Ian Ehram
Sean Instasi
Jacob Kline

Colin Lunstrum
Ivan Pettit
Nicholas Pica
Martin Taylor
M.S. Met.E.
Jakraphan Ninlachart Rtn
M.S. M.S.E.
Robert D. Blair
Ph.D. M.S.E.
Steven Sitrler

Good job!

WERC & STUDENT PAPER NIGHT

WERC task teams

Task 1 – Open Task : Improvement of Lead Acid Battery Performance with Conductive Ceramic Fibers using a Recycled Tires Feedstock.

By: J. Seth Dustin, Jesse Hinshaw, Jieun Lee, Jeff Porter & Josh Roper
• **First place - University of Idaho Go J-Team!!!!**

Tires were used as a feedstock to deposit a highly conductive carbon matrix onto ceramic fibers. Those fibers were incorporated into lead acid battery positive plates, increasing the overall performance of the battery through higher positive-plate active material utilization.

Task 2 – Haul Truck Tires: Cryogenic Recycling of Haul Truck Tires

By: Allie Brown, Adriana Carbon, Isaac Curtis & Emily Mariner

• **Second Place - University of Idaho**

Open-pit mines generate thousands of waste tires each year that are mostly buried on-site, posing various environmental hazards. Although recycling possibilities exist, most are infeasible due to isolated mining locations. A mobile system paired with cryogenics to make recycling opportunities feasible for mine sites was developed.

Task 3 – Treatment of Wastewater for Reuse:

Clear Effluent and New Ideas

By: Kyle Knapp, Adam Spencer, Sydney Tracy & Morgan Wood

• **Judges Choice for Outstanding Presentations, University of Idaho**

Reuse of wastewater is becoming a necessity in regions with limited access to water. A two column filtration and Activated Carbon-Ozone reactor system has been designed to clean wastewater effluent and remove unregulated pharmaceuticals from solution. This makes wastewater effluent potable for potential reuse in the drinking supply.

If you are interested in sponsoring a design team contact:

Dave Drown ddrown@uidaho.edu or Matt Bernards mbernards@uidaho.edu



L-R: Kyle Knapp, Adam Spencer, Morgan Wood, Sydney Tracy, Jeff Porter, Seth Dustin, Jieun Lee, Dave Drown, Jesse Hinshaw, Josh Roper, Emily Mariner, Allie Brown, Adriana Carbon, Isaac Curtis



L-R: Ian Ehram, Margaret Fitzgerald, Jacob Kline

Student Paper Night of the ASM Inland Empire Chapter, April 2016,

Jacob Kline won first place for his presentation "Corrosion of Rebar Steel Immersed in Saturated Cement Solutions"! Jacob Kline, Ian Ehram and Margaret Fitzgerald all won cash prizes for the presentations.

Martin Taylor took First Place in the Electron Micrograph competition, and

Brandon Hardie took Second Place in the Artistic category.

Advisor: Mark Roll mroll@uidaho.edu

OUTSTANDING SENIORS 2015-16



ChE—Adam Spencer
Dr. Eric Aston

MSE—Robert D. Blair
Dr. Eric Aston



IN MEMORIAM—JAY AND LOU

We are sad to report the passing of two retired faculty who defined the Chemical Engineering Program for 50 years. Dr. Jay Scheldorf, Sr. passed away, in Moscow, on May 28th of this year and just 2 months later, Dr. Lou Edwards passed away in Costa Mesa, CA. on July 25th.

Jay Scheldorf, Sr. 1932-2016



Jay, who had earned a BS from the University of Illinois, an MS from Kansas State University and a PhD from Colorado University, first came to Idaho in 1966 after teaching at Colorado for 8 years. He was a "teacher's teacher". He devoted his entire career to teaching and anyone who took his courses knew they were challenged and also knew that they had learned skills that would serve them well in their later careers. In many ways he was a traditional teacher but he was not adverse to innovation. For a number of years he team taught the Unit Operations course with Bill

Thomson, giving the students a perspective from both the practical and theoretical aspects of the subject. Because he had a half-time appointment in the Engineering Science curriculum, he influenced not only chemical engineering students, but virtually every student who came through the College of Engineering. In recognition of his outstanding teaching, in 1992 he received the ASUI Outstanding Teacher Award. Upon hearing of his passing, a number of former students and faculty expressed their sympathy and memories of him. Here are a few of their comments.

Jim Batdorf (BS,MS,PhD 1988) *I am sorry to hear the news, Jay was a special teacher and I remember taking his ChemE Thermo more than any other class. I think it stands out because Jay was so tough, but also because he pushed me to a higher level*

of performance. He will be missed.

Ralph Cavalieri (BS, 1975, Associate Provost, WSU) *Sad news, I'll never forget the infamous "J2S" Laboratory Report format. Totally (overly?) specified.*

Candis Claiborne (BS 1980, Dean of Engineering, WSU) *Thank you for letting us all know. All of us that took thermo or other courses from him know just what you are talking about. I for one count him as one of my great professors despite his old school approaches. There are not many faculty remaining, the likes of Professor Scheldorf.*

Julie (Sherrrod) Erickson (BS, 1981) *Thanks for sharing. He was a memorable professor and you are right - we all learned something from him.*

Jim Haynes (BS,MS,PhD 1989) *Thanks for letting me know. I thought Jay was a tremendous asset to the department. He was one of the "goal keepers" of the department.*

Marjorie Mink Hatter (BS,MS 1980) *Thanks, for letting me know. Jay was a great teacher and friend.*

George Kudy (BS,MS 1975) *Thank you for sharing this very sad news.*

Phil Reirsgard (BS,MS 1974) *I'm sorry to hear the sad news. I never noticed that Dr. Scheldorf was "old school" which reinforces the assertion that I've heard that I myself am "old school". I enjoyed his thermo class and its concepts have surfaced many times throughout the years.*

Dilip Saletore (MS 1976) *Very sorry to hear about Jay's passing. I remember him very well. May God Bless his Soul and bring comfort to his family*

Jim Smart (BS, MS 1970) *Bill, that's sad. I remember Jay well. Yes, seems unconventional but effective describes his teaching style.*

Vic Selzer (1975) *That is a sad thought. I have many memories of Jay, especially his old school style. I did learn a great deal from Jay.*

Gordon Bopp (Professor, 1962-73) *I was truly saddened to hear the news about Jay's passing. Jay and I go way back in time to when he was a grad assistant at the University of Colorado in Boulder working on his doctorate in Chem. E. My very first Chem. E. class at CU was "Stoichiometry" taught by - you guessed it - Jay Scheldorf!! I learned early on how truly committed Jay was to teaching. It (he joining the Department) turned out well as many of the student comments reveal Jay's talents in the classroom and his commitment to his students.*

Bob Furgason (MS 1958, Prof, Dean, VP.) *Always a sad time when we lose a long time colleague and friend. We were viewed as the brash bunch of renegades but we did lead the pack. It was a fun time at the U of I. Jay was certainly a major contributor to the department.*

Don Sundberg (Professor, mid 1970s) *I remember Jay quite well. Sad to hear that he is gone. As I was thinking about him, I recalled the energy audit we did as a group for the food processing companies in southern Idaho. Pretty big project, as I remember.*

Bill Thomson (PhD 1969, Professor 1969-1980) *Not only was Jay a close friend for over 50 years but we collaborated as colleagues in joint teaching*

the Unit Operations course. Others have commented on his many contributions to teaching and the impact he had on students so let me share an incident that speaks to his quick wit. During classes when we team taught he would sit in the back of the class as I taught and vice versa. I was teaching when I smelled the distinct odor of peanuts and I asked, "is someone eating a sandwich"? Then I saw Jay eating peanuts and he was quick to remark, "I always eat peanuts when I go to the circus". He was definitely unique and certainly unforgettable. He will definitely be missed!

Link to the obituary: http://dnews.com/obituaries/obituary-jay-scheldorf-sr-of-moscow/article_d09fcb3-7b20-568f-9928-08102879dcb5.html

Lou L. Edwards, Jr. 1936-2016



Lou, who was originally from Montana, earned a bachelor's degree at RPI and a Master's at the University of Delaware. He first came to Idaho in 1961 and was one of the Department's first PhD students, receiving his PhD in 1966. He had a sterling career, marked by numerous international awards for his research as well as outstanding teaching awards. During his career he published over 100 technical papers and served as a consultant to over 30 pulp and paper companies, worldwide. He achieved international notoriety for his introduction to computer

simulations of the pulp and paper industry and four of his doctoral students started a very successful simulation company in Moscow. In 2014 Lou was selected to receive the Pulp Manufacturing Division technical Award and Johan C.F.C. Richter Prize. The prize is awarded to recipients that are judged by the Pulp Manufacturing Division Awards Committee to have provided outstanding technical contributions to the world-wide science or practice of pulping and bleaching technologies. In honor of his career, the College of Engineering created a new endowed chair, the Lou Edwards Endowed Chair in Chemical Engineering. He influenced many during his 50 years, both students and faculty. Here are some of the comments from both, upon hearing of his passing.

Gary Brown (PhD 1968) *Lou was a rare breed. He was bright, an excellent teacher, and a fun guy to be around.*

Candis Claiborne (BS 1980, Dean of Engineering, WSU) *I will always hold that cohort of chemical engineering professors, that I had the privilege to learn from, in the highest esteem. You were all fantastic!*

Hyland Lee (MS 1982) *I remember Lou very fondly as he was the only other professor that I had wanted to be my advisor.*

Yogi Soni (PhD 1974) *Very sad to hear about Lou Edwards. I still remember the cold, rainy winter night in 1970 when Usha and I arrived in Moscow and Lou was there to greet us - what a difference he made in our life, that day and forever. We will miss Lou.*

"Venki" Venkatesh (PhD 1977) *A long and fruitful life dedicated to education is lost.*

Gordon Bopp (Professor, 1962-73) *We'll not soon forget Lou who was truly "one of a kind"! A great friend, colleague and humanitarian!!*

Wayne Hager (PhD 1973, Professor of Engineering Science) *Lou, Bill Thomson, Jay Scheldorf, Mel Jackson & Bob Furgason were great mentors to me. Graduate school changed my life and provided me the opportunities that I would not have achieved with all of the support from the dept in the early 70's. It is sad to see the passing of so many gifted educators.*

Bob Furgason (MS 1958, Prof, Dean, VP.) *Very sorry to learn of Lou's death. I had the privilege of working with a very talented and dedicated group of faculty at the U of I. Always saddened to learn of a death in our family.*

Bill Thomson (PhD 1969, Professor 1969-1980) *I could fill pages about Lou, but here is an example of his caring nature. When I began teaching and was stressed, he noticed. So he took me up to the gym and introduced me to handball. It worked and I played for the next 39 years!*

Link to the obituary: http://dnews.com/obituaries/obituary-laird-edwards-ir-of-moscow/article_795f877d-4290-557c-8ee7-9a8a11423188.html (The family created a Facebook page where messages can be sent, for anyone wishing to share stories, sentiments or greetings. Search FB: Louis Laird Edwards.)

◇ Thank you to Bill Thomson for taking the time to contact everyone and put this together for the department newsletter. We appreciate it!

The department felt a great loss with these two passing, especially so close together. Our sincere condolences go out to their family and friends.

University of Idaho

Chemical & Materials Engineering

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2016 Academy of Engineers Inductees:



Corby G. Anderson

B.S., Chemical Engineering, Montana State University, 1979

M.S., Metallurgical Engineering, Montana Tech, 1983

Ph.D., Mining Engineering—Metallurgy, University of Idaho, 1987

Lynn D. Davis

B.S. Metallurgical Engineering, University of Idaho, 1971

M.S. Metallurgical Engineering, University of Idaho, 1972



Marjorie M. Hatter

B.S., Chemical Engineering, University of Idaho, 1977

M.S., Chemical Engineering, University of Idaho, 1980

<http://www.uidaho.edu/engr/events/academy-of-engineers/2016>