

CHEMICAL ENGINEERING NEWS

Fall

2002

Message From The Chair

Carl R. F. Lund

It's hard for me to believe that it's been almost six years since I became the Chair of the Chemical Engineering Department. This past fall, after meeting with the rest of the Chemical Engineering faculty, Dean Karwan asked me whether I'd be willing to accept another three-year term as Chair. I told him I'd like a few days to think about it....

Let's see, the administrative load eats up a very significant fraction of your working hours and leaves you with virtually nothing to show for it (except maybe that one line on your cv that says Department Chair, 1997 – present). In addition to worrying about keeping your own research program within the confines of its budget, you also get to worry about keeping the whole department within the confines of its (zero-growth) budget. And while speaking of zero-growth budgets, you don't really get a chance to shape the future of the department through hiring, because hiring is minimal. Then, too, there are always those long-term items like accreditation hanging over your head. You know, the kind of things that are really important, but that never seem to need immediate attention, so they constantly get pushed to the back burner while you deal with the more immediate demands, and then all of a sudden they come due. But then again, there are the unexpected "surprises" like when the Dean calls you over for a meeting and informs you that the University needs the space currently occupied by your undergraduate unit ops and materials labs and you'll need to get out of them immediately, or at least as soon as he can find someplace new for you. On top of that, there are always going to be those few things that have bugged you for years, and now that you're chair, you'll want to fix them – if you can find the time and/or money. Well, perhaps it won't even take a few days to think about it....

Unless you stop to remember that safety was always one of those things you wanted to fix, and that you asked a colleague like Mark Swihart if he'd head the safety committee. With Mark's effort and leadership, the department is in a process of transformation. There's a rigorous program of safety inspections that include all research, teaching and even office space, and the faculty and students have made major adjustments in the way they do business to make it cleaner and safer. Regular right to know safety training, chemical/biological hygiene training, RCRA waste handling training, and fire training programs have been implemented. Labs are cleaner and the inventory of older chemicals is rapidly being removed through proper waste disposal processes. Safety equipment like eye-washes, first aid kits, spill kits, etc. can be found in every lab....

Unless your undergraduate committee, with a colleague like Dave Kofke as its chair, has been silently working behind the scenes for the past few years. Then, when the accreditation process suddenly pops up on your radar screen as an immediate demand instead of a long term one, you frantically call Dave. He pulls out all the documenta-

tion the committee has accumulated (including lots from you, our alumni, whom I'd like to thank) and assimilated. He shows you the thought and effort with which this information is being used to improve the educational experience of our students. You find that not only are you ready for an accreditation visit, but that a system has been put in place that will permit the department to continually assess and improve its effectiveness for years to come.

Unless you walk into those new unit ops labs in Jarvis Hall the Friday before classes start to do a pre-operational safety inspection and find that they look marvelous. Your colleagues who have been teaching the labs, Paul Orosz and then Sharon Fritts, have planned and organized the labs in a such a way that you wish the Dean had "surprised" us out of the old labs a long time ago. You see new experimental equipment in the labs made possible by very generous donations from alumni, and realize that some of these are multi-year donations that will continue to improve the labs for several years to come.

Unless your senior colleagues go out of their way on faculty search committees to identify the very best candidates, and those candidates visit the department and experience the true collegiality that exists here and become one of the very few new faculty hired. Those senior colleagues continue to strive to build an environment that fosters success while remaining friendly. Then all of a sudden some of your "junior" colleagues aren't so junior any more with major successes: Stelios Andreadis and Sriram Neelamegham with RO1 grants from NIH, Paschalis Alexandridis wins the national Sigma Xi Award, and most recently Jeff Errington learns that he's received a CAREER Award from NSF. You find that letters for promotion cases simply write themselves. You go to the AIChE meeting and notice the growing pride of our current students and our alumni.

Unless you perceive yourself to be elbow deep in administrative duties, but then find out that without being told or asked, the staff have been quietly and steadily handling all the details, and in fact, you're really not in much deeper than your ankles. Suddenly you recall your glory days as a high school football player and you make the connection that the Chemical Engineering Department at UB is a great team. In fact you recognize that in many ways you aren't much more than the head cheerleader.

.... and then you understand first, what a great job you have, and, second, that it is a great job because everyone around you is working just as hard as you are to make it even better.

I told the Dean yes.●

Welcome New Faculty & Staff

Dr. Sharon D. Fritts joined the department as a Lecturer in August 2002. She earned a B.S. in chemical engineering from Case Western Reserve University in 1983, an M.S. from the University of Akron in 1986, and a Ph.D. in chemical engineering from Case Western Reserve University in 1989. Her research work for both her Master's and Ph.D. was on experimental studies and mathematical modeling of hydrogen-bromine fuel cells. Between her M.S. and Ph.D. degrees, she worked for Battelle's Pacific Northwest Laboratories in Washington D.C., writing technical assessments of batteries and fuel cells for the Department of Energy and electric utility companies.

In 1989, Dr. Fritts joined Occidental Chemical's research department. During the twelve years she worked at Occidental, she performed research for several business areas.

In the chlor-alkali manufacturing support group, she designed new processes for several plants, developed a specialty in ion exchange and participated in several plant start-ups, doing technical troubleshooting and operator training. Dr. Fritts switched to the PVC research area, and did mathematical modeling of PVC reactors, to reduce operating costs and increase production. In the sodium silicate area, she did manufacturing support, improved product quality, and assisted the technical service group. She also led research for a new product that required new process development, for which she designed and operated pilot plant operations. Dr. Fritts has earned five U.S. patents.

Dr. Fritts is teaching the four chemical engineering unit operations laboratory courses.●

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Dr. Mattheos Koffas joined the department as an Assistant Professor in August 2002. He earned a B.S. in chemical engineering from the National Technical University (Athens, Greece) in 1994, and a Ph.D. in biochemical engineering from the Massachusetts Institute of Technology (MIT) in 2000. His research work for his Ph.D. was on Metabolic Engineering of bacterial strains for optimizing amino acid production. More specifically, Dr. Koffas used bioinformatics, biochemical and genetic engineering tools and achieved to design novel biocatalysts with enhanced ability to produce lysine. This work has been documented in several publications and conference presentations.

In 2001, Dr. Koffas joined DuPont's Central Research and Development in Wilmington, Delaware as a visiting re-

search scientist. During his work at DuPont, he successfully identified the central carbon metabolism of an industrially important methanotroph, *Methylobacter* strain 16a, using tools such as DNA microarrays and enzyme kinetics. This work has earned him six world patents and has led to the establishment of a new bioprocess for the conversion of natural gas to high value chemicals.

Currently, Dr Koffas is undertaking research in the areas of Metabolic Engineering of industrial microorganisms, Directed Evolution of enzymes and metabolic pathways and global transcription profiling of non-sequenced microorganisms using fusion technologies. He has taught the graduate course Metabolic Engineering in the Fall of 2002 and he is currently teaching the undergraduate elective course of Process Control.●

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Dawn Townsend is the newest member of the department's secretarial staff. Dawn joins us as a Keyboard Specialist 1, replacing Angela Ethridge. Dawn serves as our department receptionist and graduate admissions secretary. She also handles the department purchasing and various types of reimbursement and travel processing.

Prior to coming to UB, Dawn served as the Town Clerk of Alexander, NY, a little town in Genesee County where Dawn resides. Before that, Dawn was a full time mother,

bookkeeper, secretary, and elementary schoolteacher. Dawn says that, despite the fact that she knows nothing about chemical engineering, she finds it very interesting here, and is learning a lot of words she has never heard before.

Dawn has three children, two married last year, and her youngest is a college freshman. She recently became a 'first-time Grandma' with the birth of her granddaughter, Olivia.●

Where's Elroy???

You may have noticed that **Elroy** is missing from this issue. The truth of the matter is, we aren't quite sure **WHERE** he is! We're told he was last seen leaving campus with his snow skis in tow. Our fear is that he is stuck in a snow drift somewhere south of Buffalo. We are in the process of assembling a search party and we hope to find him and dig him out in time for the Spring issue.

Department Completes Re-accreditation Visit

In December 2002 the Department was visited by evaluators from the Accreditation Board for Engineering and Technology (ABET), as part of our regular accreditation process. We described our preparations for this visit in a previous newsletter, and emphasized the role of our alumni and other constituencies in this process. The process is not yet complete, and the final report from ABET will not be issued until later this year, but we are very happy with the way our visit went. The evaluator identified no shortcomings in our program, and we are feeling optimistic that ABET will allow us to go another six years before another evaluation is needed. Thank you for your part in helping us to meet this important objective!

In previous letters we outlined our process for assessing and improving our undergraduate program. Alumni can tell us a lot, both about how well we're implementing our program, as well as whether our educational objectives are properly formulated to serve the needs of our students as they begin their careers. So in the future, when we call on you to provide feedback of this type, please take time to respond. You can learn more about this activity at our web site: www.cheme.buffalo.edu/undergrad/Improvement/. We'll be glad to take your feedback any time, so you don't have to wait till we send a survey!●

Department Hosts Fifth Annual Graduate Research Symposium

The Fifth Annual UB Chemical Engineering Graduate Research Symposium was held on October 16, 2002 on the UB North Campus. Our guest speaker was Professor Maria Flytzani-Stephanopoulos from the Department of Chemical and Biochemical Engineering at Tufts University. She delivered an outstanding talk on "Water-Gas Shift Activity of Metal-Modified Nanostructured Ceria." Following her presentation, CE graduate students presented posters describing their research. A total of forty-one posters were presented. The presentations were organized along the department's research themes of 'biochemical and biomedical engineering', 'computational chemical engineering', and 'nanoscale and advanced materials engineering'. Awards were presented for the best posters, as determined by a panel of judges consisting of Maria Flytzani-Stephanopoulos, Mattheos Koffas, Vasilis Pavassiliou, and Michael Ryan.

First place went to **Piyush Koria** (advised by Stelios Andreadis), for his poster entitled 'Gene Expression Profiling in Engineered Skin Substitutes Subjected to

Acute Barrier Disruption'.

Second prize went to **Suddha Talukdar** (advised by Mark Swihart, with co-author **Carla Ng**) for his poster entitled 'Aerosol Modeling and Computational Fluid Dynamics Modeling of a Laser-driven Nanoparticle Synthesis Reactor'.

Third place went to **Georgios Karanikolos** (advised by Lakis Mountziaris, with co-author Paschalis Alexandridis) for his poster entitled 'Synthesis and Functionalization of ZnSe Nanocrystals in a Multi-Phase Reactor'.

The research symposium was once again organized by the department's assistant professors (Drs. Andreadis, Errington, Koffas, Neelamegham, and Swihart). The audience for this symposium seems to get larger each year as we build on past successes, and we look forward to seeing many of you again at next year's event, to be held sometime in October 2003.●

Shape the Future of Chemical Engineering Education at UB!

Let us know your view of the skills needed by practicing engineers
(and how well we taught them to you).

Please complete the survey at: www.cheme.buffalo.edu/curriculum

CE Seminar Schedule - Spring 2003

JANUARY 15

Robert Najjar
Chemical Hygiene Hazardous Materials Manager – SUNY at Buffalo
RCRA Training

JANUARY 22

Paschalis Alexandridis
SUNY at Buffalo
NANOSCALE ORGANIZATION VIA SELF-ASSEMBLY AND DIRECTED ASSEMBLY

JANUARY 29

Edmund G. Seebauer
University of Illinois, Urbana
REGULATING SOLID STATE DIFFUSION IN SEMICONDUCTOR PROCESSING
- WITH A HUMANIST TOUCH

FEBRUARY 5

Marc Ostermeier
Johns Hopkins University
ENGINEERING A PROTEIN MOLECULAR SWITCH BY COMBINATORIAL
DOMAIN INSERTION

FEBRUARY 12

Kathleen Vaeth
Eastman Kodak Company, Rochester, NY
TO BE ANNOUNCED

FEBRUARY 19

Edward J. Maginn
University of Notre Dame
IN SEARCH OF ENVIRONMENTALLY BENIGN SOLVENTS:
ARE IONIC LIQUIDS THE RIGHT SOLUTION?

MARCH 5

Andrew J. Gellman
Carnegie Mellon University
ENANTIOSELECTIVE CHEMISTRY ON NATURALLY CHIRAL SURFACES

MARCH 19

Ingrid H. Sarelius
University of Rochester Medical Center
CONTRIBUTION OF HYDRODYNAMIC FORCES AND ADHESION MOLECULE DISTRIBUTION
TO P-SELECTIN MEDIATED LEUKOCYTE-ENDOTHELIAL INTERACTIONS IN VIVO

Unless otherwise noted, all seminars are held at 3:30pm in 206 Furnas Hall.
Please check our website for additional listings.

Faculty & Student News

Congratulations to **Rebecca M. Stadler**, a Masters of Engineering candidate working under the direction of Dr. Mountziaris, for recently having passed the New York State Bar exam. Rebecca received her JD degree from UB in May 2002, and expects to earn her MEng. degree in February 2003.

Dr. Eli Ruckenstein recently received *The Founder's Award* from the American Institute of Chemical

Engineers. This award is presented each year to an engineer who has had a profound impact on the way that chemical engineering is practiced, and whose achievements have advanced the profession in any of its aspects.

In addition, **Dr. Ruckenstein** received UB's *2003 Walter P. Cooke Award*. This is the highest honor given to non-alumnus for notable and meritorious

"Meet a Mentor" Helps Students & Alumni With Their Careers

Think back to when you were an engineering student at UB. Wouldn't you have been more focused and more successful if you had engineers in the community to turn to with questions? UB's Career Planning and Placement's "Meet a Mentor" program is dedicated to introducing students/alumni to professionals throughout the work world with career expertise, academic credentials and/or professional contacts who are willing to help UB students with the transitions from college to the workplace and alumni with the transition between careers or employment.

They have volunteers from around the globe who help answer questions about career choices, interviewing strategies, relocation, continuing education, internships, job searches and other forms of professional advancement. The meetings/conversations are arranged by the student contacting the mentor volunteer for a resume critique or to answer questions about a career field or

even to arrange a work site visit. The mentor/volunteer's amount of involvement is completely up to him or her. The volunteer decides how often and by what method they would want to be contacted.

Since 1991, thousands of matches have been made with the mentor program. Alumni mentor volunteers have voiced a strong commitment to the program, reporting a sense of fulfillment in helping students and enjoy the flexibility of becoming temporarily inactive in the program at any time.

To sign up to become a Meet a Mentor Volunteer, visit www.ub-careers.buffalo.edu and click on "Mentor". YOU can make an incredible impact on the life of a budding UB Engineering student. We hope you decide to join the ranks of mentor volunteers in this valuable program. ●

Moving?

Don't forget to give us your new address so you won't miss an issue.

Name: _____

Degree(s)/Year(s) Graduated: _____

New Address: _____

Mail your address change to: Newsletter
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We would like to hear from you to know what you've been up to since graduation! Please take a few minutes to fill out the form below and mail it to us, or reply via the web at: www.cheme.buffalo.edu/alumni. We'll put your news in future issues of our newsletter, unless you indicate otherwise. (Please check one of the boxes below to indicate your preference).

Name: _____

Address: _____

UB CE degree(s) and years: _____

Spouse's Name and Children: _____

News/Comments: _____

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