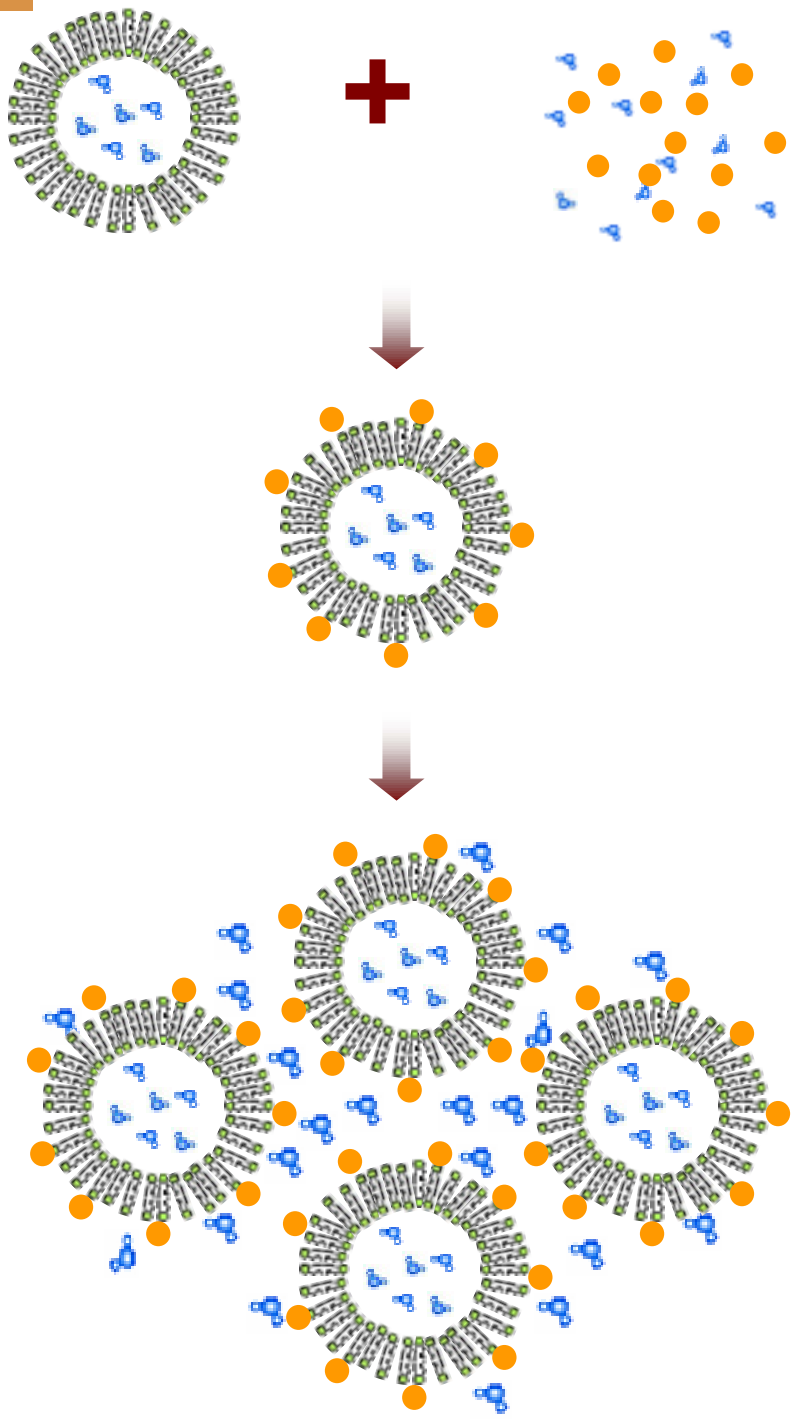
MatSE Illinois

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department of Materials Science and Engineering

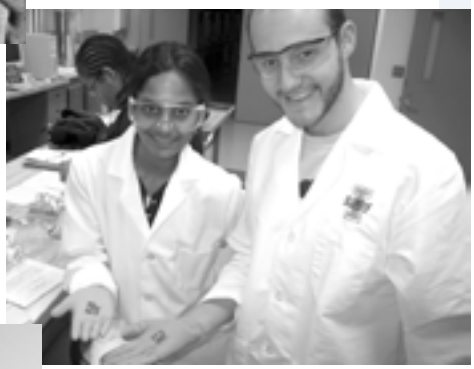


SUMMER 2006 ALUMNI NEWS

Creating biologically friendly capsule delivery vehicles
Robertson and Cahill invested as Willett Professors
Memorial to Bob Bohl

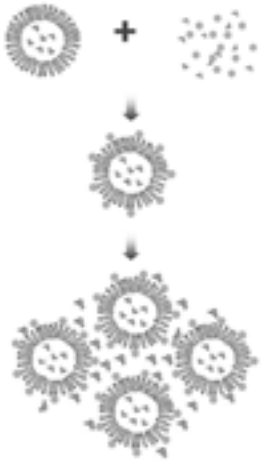
Contents

4



6

9



On the Cover

Schematic illustration of the experimental strategy to produce particle-stabilized liposomes. Upper left: DLPC liposomes with a diameter of 200 nm were made using the extrusion method. Upper right: Carboxyl-modified polystyrene nanoparticles with a diameter of 20 nm were prepared. Middle: Nanoparticle-stabilized liposomes were formed by mixing liposomes and nanoparticles at the molar concentration ratio of 1:100, with 10 min of sonication. Lower: To condense the dilute liposome suspension C, nitrogen gas was blown gently over the suspension until the desired volume fraction was attained. *Illustration courtesy of Liangfang Zhang; article on page 9.*

Congratulations to Dennis Reid, Martin Kopchak, and Ed Jakawich for correctly identifying the flashback photo from our last issue. The photo of the metallurgy classmates was taken in May 1973.

Front row: Ed Cox, Dennis Niemeyer, Dennis Reid, Myung Hwan Kim, Gary Biltgen.
Back row: Kirk Webb, Ted Wilken, Jim Scheltens, Patrick Capp, Jim Burk, David Jones, Ed Jakawich, Martin Kopchak, Larry Kastelic, Hugh Burns.

From the Head

I am always shocked when I am told it is time to write the letter for the alumni newsletter. It does not seem so long ago that I wrote the last letter, and it is hard to believe that we have completed another academic year. Where did the time go? As I reflect over the past year, I realize it has been a good one, filled with the faculty and their graduate students continuing to make incredible advances and breakthroughs, research funding increases, renovation projects getting underway, another successful recruitment year on all fronts with 70 new undergraduate students set to join us in the fall, and Dallas Trinkle joining us as a new faculty member, to list just a few.

For me, graduation day is memorable not because it marks the end of another academic year, but because it has to be one of the most exciting and rewarding days in the life of a Department Head. At our graduation lunch, I and the other faculty members get to meet the parents and hear the stories the students have told them about their professors. Complaints about the junior year labs still abound, and the students, like you, take little comfort when I tell them that in a few years they, like all the years before them, will soon be telling us not to change the labs. We are introducing some changes, and you will see one example from the senior polymers laboratory inside. In the afternoon in the Assembly Hall as I greet the students before they receive their diploma from the Dean, I am always amazed to see how they have changed over the four years. Each year I leave the Assembly Hall proud and impressed with what they have accomplished.

This year's class worked hard raising money for cancer research with various activities during the year. It should come as no surprise to learn that they were creative in their approach and their efforts were recognized by the American Cancer Society when they received the "Best Team Theme" award. They are, like all other classes, special and incredibly talented, and I know you will be proud to have them join you as an alumnus of the department.

Published twice annually by the University of Illinois Department of Materials Science and Engineering for its alumni, faculty and friends. All ideas expressed in *Materials Science & Engineering Alumni News* are those of the authors or editor and do not necessarily reflect the official position of either the alumni or the Department of Materials Science and Engineering at the University of Illinois.

Correspondence concerning the *MatSE Alumni News* should be sent to:
The Editor
MatSE Alumni News
201B MSEB
1304 West Green Street
Urbana, IL 61801

mse@uiuc.edu
www.mse.uiuc.edu

Department Head
Ian Robertson

Associate Heads
Phil Geil, Angus Rockett

Assistant to the Head
Jay Menacher

Editor & Development Associate
Cindy Brya

Our graduate students were not to be outdone; they have been collecting those fun, interesting and relatively useless scanning and transmission electron micrographs and atomic force microscope images that all of us have in abundance and turning them into art. They have collected a sampling of their work and produced the first MatSE calendar – information on how to get your calendar can be found on the back cover. The funds raised will go to projects to help promote science education at local schools - an extremely worthy and appropriate cause. I am proud of both groups of students and continue to be impressed by what they do both inside and outside the department.

This semester saw the passing of another of the department's talented faculty, Bob Bohl. Bob's stature came not from research but from his ability to teach. Through his teaching he influenced and impacted the lives of many colleagues and a countless number of students. Earlier in the year when Bob was in hospital, many of you took the time to call, write, or visit and to thank him for providing you with the education that shaped your career and, in many cases, your life. Faculty from Illinois and several other institutions expressed how they want to "Be like Bob" not just in teaching but in their dedication to students, always lending a helping hand and being there when students needed help and advice. Of course this is an impossible wish, as few could have as great an impact on so many people as Bob Bohl. During one of my visits to see Bob, he asked me "What have I done? What legacy do I leave behind?" Your response to Bob answered his questions better than any words from me, and I want to thank you for your help. Bob's legacy will live on at Illinois, and we will remember what he stood for each year as we introduce a new cohort of Bohl scholars.

The end of the semester had a few bonuses this year as alumni, friends, and colleagues returned to campus to help us celebrate the research achievements of two of our faculty, Gert Ehrlich and Howard Birnbaum. It was interesting to learn about the career paths former students have taken and to watch as some old friendships were renewed and new ones were forged. The Birnbaum Lecture Series will commence officially in the fall, with Professor Nate Lewis of Cal Tech describing the future of power and energy in the world. To all of you who have contributed to the Birnbaum Fund, thank you. This lecture series will help keep your department at the forefront.

As always, I encourage you to send me your comments or questions about the department. If you are passing nearby, please visit us and see how your department continues to progress.

Ian M. Robertson
Department Head

Bob Bohl (1925-2006)

Bob Bohl

Robert Walter Bohl (BS Met '46, MS Met '49, PhD Met '56) died March 18 at his home in Urbana at the age of 80. His sharp wit, warm humor, and above all his generous spirit will be deeply missed but fondly remembered by relatives, neighbors, friends, colleagues, and fellow volunteers.

He was born September 29, 1925, in Peoria, IL, the son of Ella E. and Francis J. Bohl. He graduated from Woodruff High School as valedictorian and student class president. He attended the University of Illinois, receiving his B.S., M.S., and Ph.D. degrees in metallurgical engineering. He joined the faculty in 1946 and retired in 1981 as professor emeritus. During his tenure, he also shared his appointment with the Nuclear Engineering Department and served as Associate Head of that program. His primary academic interests involved the relationship between the structure and properties of metals. He served as a consultant to industry and to legal firms.

Bob will most be remembered for his devotion to his students. He was recognized for his excellence in undergraduate teaching with awards from university, college, and department levels. He also won the A. E. White Award, a national teaching award from the American Society for Metals. He was advisor to student organizations and to The Technograph, the Engineering School magazine.

He was a member of several professional and honor societies including the President of Alpha Sigma Mu, the national honor society for metals and materials. He was a volunteer for numerous charitable causes, and he served on the Boards of the University YMCA, the United Way, the Red Cross, and Carle Hospital Auxiliary.

Bob married Marie Reace May 31, 1947, who survives him. He also is survived by four children: Nancy Williams (Des Moines, IA), Betty Kepley (Madison, WI), Barbara Bohl (Berkeley, CA), Robert F. Bohl (Columbia, SC). Survivors also include his sister Ruth Kirkhorn (Discovery Bay, CA) and three grandchildren.

Bob enjoyed travel, card-playing, tennis, and reading. Upon his retirement, former students organized a scholarship fund in his name which now funds several scholarships for students in the MatSE Department.

Memorial contributions may be made to the Bob Bohl Scholarship Fund *(form on page 8)*.

"Bob was always cheerful and interested in your situation. His lectures and blackboard notes were the best I ever saw. I taught for many years and never could come close to the clarity and organization I remember in his classroom."

-Paul Shewmon (BS Met '52)

Memories

Having dinner at Prof. Hiro Otsuka's home in the sakura-decorated spring season in Tsukuba City, Japan, Anita and I heard of the passing of our beloved friend and a genuine person we admired and respected. We recalled Bob's soft voice, his humor, his positive attitude and his ever politeness to students and friends. I remembered the days we played on the tennis court, the yelled curses for a missing shot, and the hand shakes after the games whether win or loss. I remembered the shadow of his back while polishing samples in the metallography laboratory on the second floor of the Met and Mining Building with darkness already coloring the sky. I remembered the chanting and cheering when Bob and I watched the Fighting Illini basketball team playing in the Assembly Hall. I remembered the lunch ventures when Bob never forgot to use up his collected food coupons in Campustown restaurants. I remembered the smiling face of Bob who rode his bicycle to the blood bank or to the recording studio to read poems and stories to those who were visually impaired. I remembered his laughs over beers at Murphy's. I remembered the words of appreciation and the standing ovation that his students gave him at the end of semester.

So he has gone, yet still present in the hearts of many. He was a model of what a great teacher should be. He was a gentleman whom every one liked and respected. Bob, it was very, very, very good to have known you. How great a life you lived and how much you gave to all of us who had the fortune to know you. You have enriched and enlightened so many of us; for all that we are eternally grateful.

-Haydn Chen, former colleague

Memories of Bob Bohl

I was fortunate to maintain some contact with Bob and Marie over the years through our mutual association with the YMCA. Bob continued to serve on its boards and committees as one of his many relationships with the University community. I recall being seated with Bob at a luncheon meeting one day, several decades after graduation. I attempted to draw the iron-carbon phase diagram. Since I did not actually practice metallurgy, this was a real test of memory. Bob chuckled a bit at my attempt but did advise that he could give me a passing grade. I was as grateful for this one as that received long before in my Ferrous Metallurgy course.

-Lowell Hoffman (BS Met '63)

Bob Bohl had retired twice, but not yet a third time when I arrived on campus. Nonetheless, his legend hung heavy in the Metallurgy and Mining Building. So the day he showed up in our Physical Metallurgy Laboratory class, hearts sunk low. Everyone who knew Bob can guess what followed, long hours of polishing and re-polishing aluminum samples - every scratch scoffed at, any etch burn at a second phase particle needed to be redone. I plan to never work that hard again to take a couple pictures. Regardless of how frustrated I was for those few weeks, there is no doubt that Bob was able to teach that metallography is difficult, and high quality photographs are needed to reach sound conclusions. But the real value of all that hard work was a practical appreciation for the complexity of phase behavior and how to use metallography to trace back material histories. I used those same skills 15 years later to work through a problem with out-of-specification materials and to develop a plan to recover a 6-month delay associated with starting over.

-Dan Lillig (BS Met '93, PhD MatSE '00)

Few individuals have touched the lives of as many people as Professor Bohl. His sustained dedication to both teaching the principles of Metallurgical Engineering and being a student's advocate at the University of Illinois for over 50 years is legendary. However, his role as mentor and friend is what stands out in my mind. When we, as students, failed to get as many points as we needed on our exams, and our future as engineers got a little cloudy as a result, Professor Bohl was always there to help. When industry representatives were looking for summer interns, Professor Bohl's recommendations resulted in summer employment for many students. This fact not only led to great learning experiences, but strengthened resumes for future employment opportunities and successful careers. The great importance of Professor Bohl to so many people is evident by the large number of testimonials to him from both graduates and colleagues over the years, and, especially more recently. Bob will be truly missed.

-Doug Ruhmann (BS Met '64)

College of Engineering connects alumni through exclusive online community

With the increasing demand for more and better online communication tools, the College of Engineering is on the cutting edge of alumni relations with a new online community exclusively for UIUC Engineering alumni. *Always Illinois* empowers Engineering alumni to maintain life-long friendships, to network with other engineering alumni in a secure global online community, and to stay connected with the college, their department, and student organizations.

Always Illinois is a trusted and secure online forum where approximately 70,000 Illinois Engineering alumni can build and maintain personal and professional connections. Unlike online social networks that are open to the general public, *Always Illinois* is a private-label network that requires identity verification before an Engineering alumnus/a can join.

One-time, customized authentication numbers will be mailed (emailed if we have your email address*) to Illinois Engineering alumni this summer for registration purposes. Once registered, users create their own password for all future login. Engineering alumni can register and login by visiting www.always.illinois.com.

This user-friendly online community is driven by alumni users. Once on the network, participants can create customized groups that allow alumni to discuss issues ranging from first-time parenting to mountain biking to organizing a reunion on campus. Forums offer a place to ask and offer advice, find a place to live, or post a job exclusively to fellow alums. Users can communicate through messaging, photo albums and blogs and can also use the search capability to find other alums who share interests, common acquaintances, professions, locations, and more.

Alumni information is pre-populated, making it easy for users to build profiles and totally control what information is available to others. The network grows quickly by Illinois Engineering alumni inviting fellow Illinois Engineering friends to partake in the virtual community. *Always Illinois* is powered by Affinity Engines, the leading provider of private-label online social networking solutions for alumni associations.

Look for your registration information soon so that you can login to *Always Illinois*! We are very excited about this new opportunity to connect with our Illinois Engineering alumni and are confident that you will enjoy the chance to connect with friends and classmates in this convenient and secure online community. If you have questions about *Always Illinois*, please send them to alwaysillinois@engineering.uiuc.edu or contact Angie Dimit, Associate Director of Development, at 217-244-1610.

*Engineering Lifetime Forwarding Email provides you with a professional email address--constant through job changes-- for your lifetime, and one that reflects the global eminence of an Illinois Engineering education. Get yours today at www.engr.uiuc.edu.

Where else could you build your own polymer LEDs?

This spring, students in John Rogers' MSE 452 lab course on Polymer Characterization got an opportunity to get their hands dirty…or at least busy.

Meena Babu and Kyle Wilcoxen show their polymer LEDs

"With the help of my graduate teaching assistants, Seokwoo Jeon, and Shraddha Avasthy, we added a new laboratory component this semester in which the students build polymer light-emitting diodes, and test their electrical and optical responses," explained Rogers. "This lab, which is among the first of its type for undergraduates, provides the students with hands-on experience in a cutting edge area of polymer technology that has a large potential for wide-ranging impact in consumer electronics."

According to Rogers, the goal was to provide the undergraduates with hands-on experience with processing of polymeric conductors, semiconductors, and light-emitting materials. Students gain an understanding of electrical transport and light emission in polymers and become familiar with basic electrical and optical measurement equipment, including probe stations, source meters, oscilloscopes, photodiodes, and related instrumentation.

"Our students fabricate these devices by spin-coating hole transporting and electroluminescent polymers, establishing electrical contacts and hermetically sealing the active areas," he added. "They measure the current-voltage and intensity-voltage characteristics of devices that they fabricate, analyze the data, and explore trends in behavior for devices with different active layer thicknesses and emission areas."

For the fall 2006 term, Rogers plans to use the experimental infrastructure assembled for the this polymer LED lab (i.e. the spin coater and electrical testing setups) to add another new component to the course: an experiment in which the students build and test organic thin-film transistors.

Since the discovery in 1977 of electrically conducting polymers--a discovery that was recognized by the 2000 Nobel prize in chemistry--there has been an explosion of research in polymeric materials for semiconducting, conducting, insulating and even light-emitting layers of electronic and optoelectronic devices. The study of electrical and optical properties in these materials, and the techniques used to create active devices out of them are both exciting areas of modern polymer science and technology.

-Article and photo courtesy of Rick Kubetz, Engineering Communications

UMO raises money for cancer research

The campus-wide Relay for Life event took place on April 28-29 at the Illinois Track, culminating the Undergraduate Materials Organization's semester-long effort to raise money for the American Cancer Society. The 15 members of Team UMO collectively raised a grand total of $2,233 in support of cancer research, qualifying themselves to be named members of the ACS Bronze Club, and were rewarded with special pins for this honor. UMO was also selected among over 150 other teams as having the Best Team Theme, to "e-lemon-ate cancer," based on their coordinated team t-shirts, campsite decore, and on-site fundraisers.

Team Members: Meena Babu (captain), Evan Rabens, Gerald Marchand, Patrick Coyle, Nicole Cieslak, Michael Elsen, James Young, Paul Camann, Daniel Widing, Bob Bierman, Nicholas Pytel, Jordan Spencer, Pamela Wojtulewicz, Chloe Miles, and Kyle Wilcoxen.

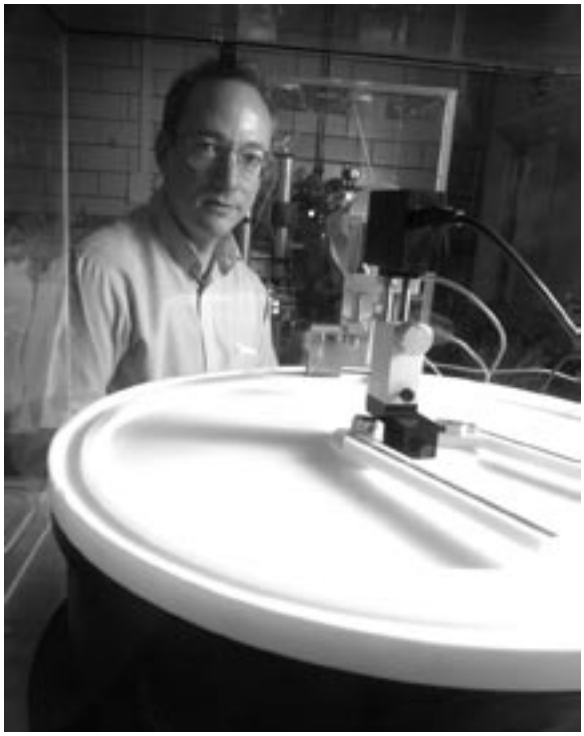
Nanoparticles create biocompatible capsules

An innovative strategy of mixing lipids and nanoparticles to produce new drug and agricultural materials and delivery vehicles has been developed by researchers at the University of Illinois at Urbana-Champaign.

"This is a new way to make nano-size capsules of a biologically friendly material," said MatSE professor Steve Granick. "The hollow, deformable and biofunctional capsules could be used in drug delivery, colloidal-based biosensors and enzyme-catalyzed reactions."

Lipids are the building blocks of cell membranes. The construction of useful artificial lipid vesicles was previously not possible, because the vesicles were too delicate. Granick and graduate student Liangfang Zhang found a way to stabilize lipids and stop their destruction. The researchers describe their technique in a paper published in the April 2006 issue of the journal *Nano Letters*.

To stabilize lipids, the researchers begin by preparing a dilute solution of lipid capsules of a particular size. After encapsulating chemicals in the capsules or adsorbing molecules on their surfaces, they add charged nanoparticles to the solution. The nanoparticles adhere to the capsules and prevent further growth, freezing them at the desired size. The lipid concentration can then be increased without limits.



Steve Granick

"We form an 'army' of uniform capsules, and then we can use them in a military fashion," said Granick. "That is, the capsules are well behaved, and follow orders without wandering off and propagating."

As proof of concept, Granick and Zhang encapsulated fluorescent dyes within lipid capsules. No leakage occurred, and the lipids proved stable against further fusion.

"This opens the door to using biologically friendly capsule delivery vehicles in exciting new health and agricultural applications," Granick said. "Chemical reactions can be performed within individual isolated capsules, or on groups of capsules linked together like boxcars in a train."

The biocompatible containers could carry cargo such as enzymes, DNA, proteins and drug molecules throughout living organisms. They could also serve as surrogate factories where enzyme-catalyzed reactions are performed. By attaching biomolecules to the capsule's surface, novel colloidal-size sensors could be produced.

"A drug contained in this nano environment is like a fish swimming inside a bowl."

-Steve Granick

An additional use for stabilized lipid capsules is the study of drug behavior. "A drug contained in this nano environment is like a fish swimming inside a bowl," Granick said. "We can study the 'fish' in detail, and it won't swim away."

The U.S. Department of Energy funded the work.

-Article courtesy of James E. Kloeppel, UI News Bureau
-Photo courtesy of UI News Bureau

Welcome to MatSE at Illinois

Dallas Trinkle will be joining the MatSE faculty at Illinois this fall. Trinkle received his bachelor's degree in physics and mathematics from Xavier University and his doctorate in theoretical condensed-matter physics from Ohio State University. For two years during his Ph.D., he worked at Los Alamos National Laboratory in the theoretical division. While in New Mexico, he became more interested in materials science and using computational atomistic methods to understand material properties, especially mechanical behavior. His thesis focused on the theoretical study of the alpha-to-omega martensitic phase transformation in titanium with impurities. Following his graduation in 2003, Trinkle became a National Research Council postdoctoral associate with the materials and manufacturing directorate of the Air Force Research Laboratory at Wright Patterson Air Force Base. At Wright Patterson, he studied the chemical effect of solutes on plastic deformation in both refractory metals and aluminum alloys.

Department of Materials Science & Engineering Fund

Yes, I want to support MatSE with my gift of: ❒ $1,000 ❒ $500 ❒ $250 ❒ $100 ❒ Other:_____

❒ I have enclosed my check in the above amount made payable to: UIF/MatSE Dept. Please direct my gift to:

- ❒ MatSE general fund [3-32845]
- ❒ Bob Bohl Scholarship Fund [3-71507]
- ❒ Ceramic Engineering [3-75740]
- ❒ Earl Eckel Scholarship Fund [3-72479]
- ❒ Clifton Bergeron Scholarship Fund [3-72728]
- ❒ Howard Birnbaum Lecture Series Fund [7-70282]
- ❒ SILC project/Kiln House (MatSE labs) [3-32331]
- ❒ Charlie Wert Scholarship Fund [3-73848]
- ❒ Metallurgy & Mining Engineering [3-77904]
- ❒ Jim Nelson Scholarship Fund [3-72833]
- ❒ Phil Geil Scholarship Fund [3-42387]
- ❒ Other: _____

❒ I authorize the U of I Foundation to collect my gift in the amount above through the credit card checked:

❒ Visa ❒ Discover ❒ MasterCard ❒ American Express

Card no.: _____ Expiration date: _____Signature:_____

❒ My company, _____, will match my gift with $_____.
I am enclosing my employer's Matching Gift form.

5M 5GE

Name_____

Home address_____

City_____ State_____ Zip_____

I understand that this gift is tax deductible as allowed by law.

Make your gift online: *www.mse.uiuc.edu/alumni/giving.html*

Return this form and your check to:
University of Illinois Foundation
P.O. Box 3429
Champaign, IL 61826-9916

In Memoriam

Paul Eugene Buckles (BS Cer '38, MS Cer '40) passed away March 16, 2006, in Columbus, OH. His career was spent in the ceramics industry. He was a 50-plus year member of Zanesville's Grace United Methodist Church and a member of the Y-City Barber Shoppers. The Fighting Illini hoops and football teams were one of his pleasures. Traveling to see the leaves change in the fall and golfing were some of his others. He is survived by his son, Ron; five grandchildren; and two great-grandchildren. He was preceded in death by his first wife of more than 50 years, Doris Aycock Buckles; his second wife, Maxine Buckles; a son, Joel Buckles; and his brother, Max Buckles.

William T. Becker (BS Met '57, MS Met '60, PhD Met '66) died January 5, 2006. He taught at the University of Tennessee for 25 years, recently retiring from the Department of Materials Science and Engineering. His professional contributions included extensive service to ASM International. He was co-editor of the ASM Handbook "Failure Analysis and Prevention," co-chair of the Failure Analysis Committee, and a member of the review board of Practical Failure Analysis. He also served as faculty sponsor of the student chapter of ASM at the University of Tennessee in Knoxville for several years. His 28 years of teaching for ASM were recognized with awards for distinguished instruction and service. His expertise was sought by federal and military agencies, insurance companies, and several legal and industrial firms for whom he served as a consultant. He was a member of Alpha Sigma Mu honorary professional fraternity. His keen love of nature led him in earlier years to enjoy fishing, hiking, camping, and mountain climbing. He enjoyed folk music and played guitar, banjo and dulcimer. He was an avid model railroader and served as an officer in the National Model Railroad Association (NMRA) for several years. He was a driving force in the establishment of the NMRA's Kalenbach Memorial Library in Chattanooga. He received the organization's President's Award in 1980 and became an Honorary Life Member. He was preceded in death by his first wife, Carol Peternell. He is survived by his wife, Margaret "Peg" Schulte Becker, and children.

Scott Covey (BS Cer '93, MS MatSE' 95) passed away April 22, 2006. He was a member of the Sigma Phi Delta engineering fraternity and was inducted into the Knights of St. Patrick Engineering Society. Covey was employed by Allstate Insurance Company at their corporate headquarters in Northbrook, IL, as a personal lines manager of the risk management department. He enjoyed gardening, performing home improvements, and doing volunteer work. He is survived by his fiancé, Shelly Longhorn of Milwaukee; parents, John and Kay Covey of Peoria; and brother Chris.

Department Notes

Khalid Hattar, Ph.D. student in Ian Robertson's group, and **Parasuraman Swaminathan**, Ph.D. student in John Weaver's group, received 2006-07 Mavis Memorial Fund Scholarships from the College of Engineering.

Khalid Hattar, J. H. Han, Taher Saif, and **Ian Robertson** won best poster award at the Midwest Microscopy and Microanalysis Meeting.

Jennifer Lewis' research on 3D synthetic diatoms from ink writing assembled scaffolds was featured on the cover of *Soft Matter* (March 7, 2006).

The cover image of the June 2006 issue of the *Journal of the American Ceramic Society* highlights collaborative work of **Jennifer Lewis'** and **Paul Braun's** research groups.

John Rogers' stretchable silicon was one of the top 10 new technologies for 2005 according to *MIT Technology Review* (March/April 2006). Rogers' research "Transfer printing by kinetic control of adhesion to an elastomeric stamp" was featured on the cover of the January 2006 issue of *Nature Materials*.

Erik Luijten has been selected as a recipient of the 2006 Xerox Award for Faculty Research.

Jianjun Cheng's research on developing drug and gene delivery systems was featured in the Champaign-Urbana *News-Gazette* (December 21, 2005).

John Weaver's work was chosen as a Chemistry Highlight 2005 by Chemical and Engineering News.

Brent Trenhaile, Ph.D. student in John Weaver's group, won the Dorothy and Earl Hoffman Scholarship of the AVS.

MatSE seniors **Meena Babu, Kate Jakubas,** and **Jessica Koschmeder** were selected for the 2006 Knights of St. Patrick.

Cindy Brya received the Golden Shamrock Award from the Knights of St. Patrick. The award is presented to a staff member within the College of Engineering who has shown support and encouragement to students and their organizations.

The Illinois Chapter of Keramos was awarded the Sapphire Award (3rd place among all chapters) at the Keramos Convocation. Illinois also won the Best Looking Putter in the putter competition.

Ryan Haggerty, Ph.D. student in Trudy Kriven's group, will attend the National School on Neutron and X-ray Scattering held at Argonne National Lab in August. There were over 600 contestants for this school, and Haggerty was one of 60 students chosen.

Cahill and Robertson invested as Willett Professors

MatSE faculty Ian Robertson and David Cahill were invested this spring as Donald Biggar Willett Professors of Engineering.

Ian Robertson came to the University of Illinois after receiving his D. Phil. in metallurgy from the University of Oxford in 1982. He currently holds a primary appointment in the MatSE Department and has an affiliate appointment in the Mechanical and Industrial Engineering Department. In 2004 he was appointed as Head of MatSE.

College of Engineering Dean Ilesanmi Adesida, University Chancellor Richard Herman, Petros Sofronis (Mechanical and Industrial Engineering), Ian Robertson, David Cahill, Ken Schweizer, and Bob Averback

Robertson's research expertise is in the area of deformation process and mechanical properties of metals in extreme environments, and in the application of the transmission electron microscope as an experimental laboratory. He received the MatSE Department's Burnett Teaching Award in 1992, and shared, with Howard Birnbaum, the Department of Energy prize for Outstanding Scientific Accomplishment in Metallurgy and Ceramics in 1984.

David Cahill joined the faculty at Illinois after earning his Ph.D. in condensed matter physics from Cornell University in 1989 and working as a postdoctoral research associate at the IBM Watson Research Center from 1989 to 1991. He currently holds a primary appointment in the MatSE Department and is affiliated with the Frederick Seitz Materials Research Laboratory and the Coordinated Science Laboratory. He is Associate Director of the Center of Advanced Materials for Purification of Water with Systems (WaterCAMPWS), a National Science Foundation Science and Technology Center based at the University of Illinois.

Cahill's work in the materials physics of surfaces and heat conduction in materials has received wide acclaim. He is a Fellow of the AVS and received the society's Peter Mark Memorial Award in 1998. At Illinois, he has been recognized with the Xerox Faculty Research Award and University Scholar Award in 2000 and the Willett Faculty Scholar Award in 2002.

Eastman, Harmon, and Schulz elected to MatSE Alumni Board

Jeff Eastman (BS Met '79, MS Met '82) is a principal investigator and group leader in the materials science division of Argonne National Laboratory. Following completion of a Ph.D. in materials science from Cornell University in 1985, he spent two years at the Max-Planck-Institut für Metallforschung in Stuttgart, Germany, as an Alexander von Humboldt post-doctoral fellow. Since joining Argonne in 1987, Eastman has authored or co-authored over 140 peer-reviewed publications and five patents. His research interests include in-situ x-ray and TEM studies of alloy oxidation, processing, characterization, and properties of nanostructured materials, synthesis and heat transfer behavior of nanofluids, synchrotron x-ray studies of epitaxial thin films, ferroelectric properties of single crystal oxide thin films, and mechanical behavior of nanocrystalline metals.

Jeff Eastman

His current professional service activities include membership on the Materials Research Society's Awards Committee and Graduate Student Award Sub-Committee. He and his wife, Corrinne, live in Naperville, IL, with their three children: Justin, 16, Kevin, 8, and Alex, 7.

Joseph Harmon

Joseph Harmon (BS MatSE '99) spent the past two years at Northwestern University in the Masters of Management and Manufacturing (MMM) Program, a two year dual degree program in which graduates earn both a Masters in Business Administration (MBA) from the Kellogg School of Management and a Masters of Engineering Management (MEM) from the McCormick School of Engineering and Applied Science. He served as President of the MMM Student Executive Council during his second year and focused on increasing applicant awareness of the MMM program. Before returning to school at Northwestern, Harmon worked as a process engineer at Advanced Micro Devices (AMD) manufacturing microprocessors and FLASH memory in Austin, TX. At AMD, he worked as a member of the Thin Films team specializing in both front-end-of-the-line (FEOL) and back-end-of-the-line (BEOL) SiO_2, SiN, SiON, and other dielectric film deposition. His largest project at AMD involved doubling the throughput of nine Novellus SEQUEL PECVD systems, saving the company approximately $6 million.

After graduating from Northwestern, Harmon will begin work with DePuy Orthopaedics, a Johnson and Johnson company, in Warsaw, IN. At DePuy, he will be working on the knee marketing team. Harmon enjoys coaching and officiating basketball and has recently started performing improv comedy on a team at Northwestern University. In March 2003 he married Casey Harmon (BS MatSE '99) who is currently living in Warsaw, IN, and works for Zimmer, a world leader in orthopedics.

Lawrence E. Schulz' (BS Cer '76, MS Cer '77) master's work was funded by the Refractory Institute through a fellowship granted to Professor James Nelson. The thesis topic was refractories for use in coal gasifiers. After graduation, he joined Nalco as a product development engineer, working on refractories for the steel industry. Schulz' work led to a patent for a unique phosphate gelled colloidal silica binder system. After two years in refractories development, Schulz was transferred to a position as a process engineer in a Nalco facility that produced catalyst for ammonia manufacture and for hydrotreating of petroleum feed-stocks. Work in the facility included managing medium size capital projects, production management, quality and environmental oversight and catalyst development. His innovations improved product quality and production rate and reduced environmental impact of production. During this time, Schulz authored a second patent for a catalyst used to upgrade refining residua to usable fuel feedstock.

Lawrence Schulz

Schulz recently joined Magneco/Metrel, where he again works in research and development of refractories. He has been married to his wife Lonna (nee Streight) (BS Cer '79) for 27 years. They have 2 children: Nathan, 20, and Bernadette, 18.

Class Notes

1940s

Francis (Fritz) Wright (BS Cer '47) retired from contract supervision for the Defense Department after careers with Pittsburgh Plate Glass and American Standard. "If you have an Amercast tub or wash basin from American Standard, I invented the material when Manager of Plastics engineering—so enjoy," Wright said.

1960s

Jim Watters (BS Met '66) has been self-employed for 14 years in the area of energy consulting. His business, Delaware Valley Utility Advisors, is located in Lansdale, PA. Watters has lived in suburban Philadelphia for 20 years following stops in Palo Alto;

Class Notes

Bethlehem, PA; Boston; and Corning, NY. He and his wife of 35 years, Elaine, have two children.

1970s

Don Weber (BS CER '72) has been appointed resident circuit judge in Madison County, IL. He has served as a prosecutor for 30 years. Before his judicial appointment, Weber was assistant state's attorney for Madison County.

Dennis Reid (BS MET '73) operates a consulting and training company working closely with local colleges and community colleges. He and his wife, Debby (BS EDUCATION '73), reside in Raleigh, NC.

Ed Jakawich (BS MET '75) is a welding engineer at Puget Sound Naval Shipyard. He has 29 years of government service and plans to retire in about 5 years when his pilot son finishes up his first commitment in the Navy. Jakawich worked in Saudi Arabia for Saudi Aramco for the past three years as a welding and materials engineering specialist and has spent about half of his career working outside of the U.S.

1980s

Ed Brown (BS MET '83) works as a patent attorney at the law firm Buchanan Ingersoll, in Alexandria, VA.

Tim Armstrong (MS CER '86, PHD CER '89) has joined Franklin Fuel Cells as Chief Technology Officer. Armstrong has more than 17 years' experience in the development of materials and components for fuel cells, hot-gas separation membranes, and sensors. Prior to joining Franklin, he was the Manager of the Hydrogen, Fuel Cell, and Infrastructure Technologies Program at Oak Ridge National Laboratory in Tennessee.

1990s

Chris Ervin (BS MET '95) has accepted a position as the Works Manager for Gerdau Ameristeel's plant in Wilton, IA, and will be relocating to the Quad Cities area.

Kurt Greissinger (BS MATSE '95) and his family have moved back to Michigan, where he is now employed at Bosch.

Tim Holmstrom (MS MATSE '97) and his wife, Virginia, celebrated the birth of their daughter, Lucy, on February 26, 2006, in Newport News, VA.

MatSE Calendar

Attractive 17-month calendar (August 2006 - December 2007) features artistic images from graduate student research in the MatSE Department at the University of Illinois.

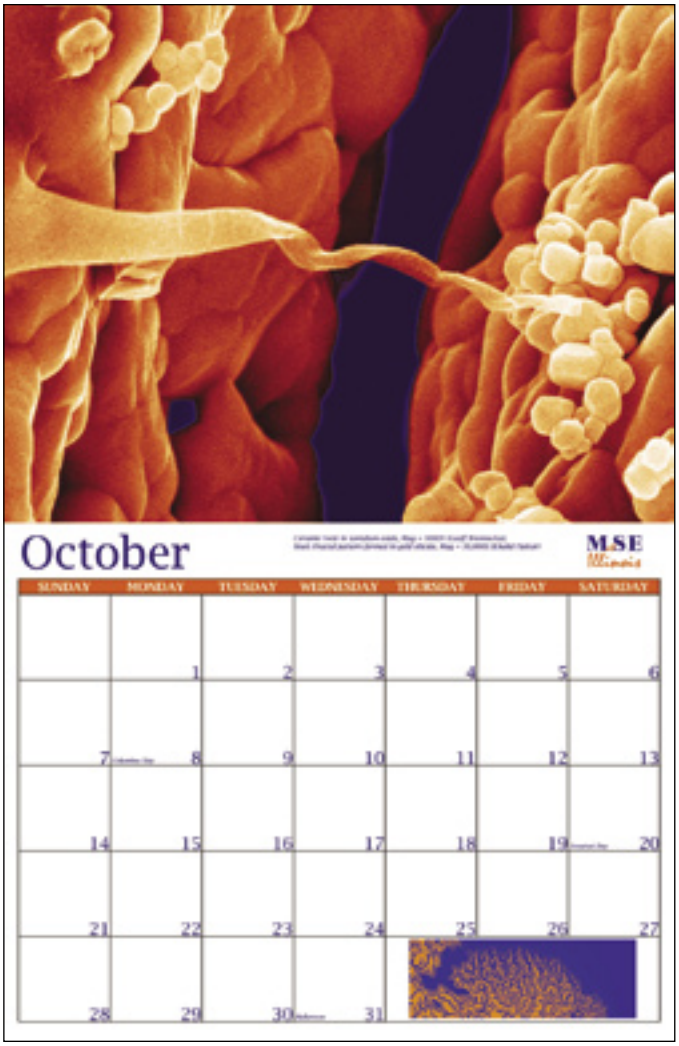
The calendar includes TEM, SEM, STM, and optical images, as well as images from computer simulations. All black and white images have been enhanced with color, so every month has beautiful, full-color images.

Calendar dimensions are 17” x 11” when fully opened; pages are 8.5” x 11”.

The price is $18, including shipping (for calendars shipped in the United States; extra charge for shipping overseas). All proceeds from sales will go towards promoting science education in local Champaign-Urbana schools.

To order your calendar, please send a check (made payable to the University of Illinois) to “MatSE Calendar” at the department’s address below. For more information, e-mail matsecalendar@gmail.com.

The calendar was created by graduate students in the Materials Research Society (MRS) chapter at the University of Illinois.



University of Illinois at Urbana-Champaign
Department of Materials Science and Engineering
1304 West Green Street
Urbana, IL 61801, USA