

MATSE

Penn State

PENNSTATE



on the cover

Steidle Building has been the Department of Materials Science and Engineering's home for more than thirty years. The building, originally called the Mineral Industries Building, was completed in 1930. It was later renamed in honor of Edward Steidle who became Dean of the School of Mines in 1929. Edward Steidle is credited with strengthening what became the College of Earth and Mineral Sciences by promoting the accomplishments of the school's faculty, searching out the best qualified teachers and researchers and bringing them to Penn State, and encouraging education based on scientific principles.

The name of the newsletter, *Penn State MATSE*, is a result of a contest we held late last year. There were many great entries, but eventually we had to choose. *Penn State MATSE* was selected because it says who we are: the Department of Materials Science and Engineering at Penn State. The name was submitted by Professor Long-Qing Chen who will receive dinner for two at his favorite downtown State College restaurant.

Penn State MatSE is a publication of the Department of Materials Science and Engineering.

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This publication is available in alternative media on request.

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*Richard E. Tressler, Head
Department of Materials Science
and Engineering*

he demand for materials scientists and engineers remains robust at all levels since materials are so important to U.S. defense and global economies. The role of materials science and engineering departments in universities has evolved to one of integrating and interpreting the role between the basic sciences and the customer engineering disciplines. Research and instruction in the discipline will increasingly need to focus on applications and design of materials for specific functions and systems.

At Penn State, our strategic planning in the Department of Materials Science and Engineering has been guided by these forces and the recognition that growth areas in materials science and engineering will include computational materials, energy generation and storage, new photonic and magnetic materials and structures, materials in medicine, environmentally benign processing of materials, recyclable and reusable materials, and smart materials and devices. In many areas we have strength—in others we will become a major factor by adding faculty and staff with expertise in areas where we lack strength.

As we endeavor to do this, your input as alumni and people who work in the materials field is vital. Our hope is that this newsletter will keep you informed about the department's activities, and provide a means for you to let us know about yours. We look forward to renewing our relationship with you, and maintaining links that will keep materials science and engineering at Penn State a leader in the world materials community.

CHANGE.

To borrow a line from Martha Stewart, "It's a good thing." And the Department of Materials Science and Engineering has been up to many good things in recent years. From changes in program offerings to restructuring curriculum, the department is looking at what it offers students and is working to give them an education that will help them get a job, if not a life, when they graduate.

Although the department remains administratively sectioned into programs and both graduate and undergraduate students continue to specialize in a particular area of materials, since 1994, students graduating from the department receive a degree in Materials Science and Engineering. This change has served to broaden the general materials education and training that students receive, and the establishment of new options has provided greater opportunity for specialization. These

specialization options have undergone the most significant change as the department strives to remain a leader in materials education and research. We've added options, changed others, updated curriculum, and emphasized the importance of cross disciplinary thinking to our students. The department's ranking in the top ten materials programs in the nation by the National Research Council is evidence that the hard work and dedication of our faculty, staff, and students is paying

off. For a closer look at our changes, and why we're making them, read on!

FUEL SCIENCE AND ENGINEERING

The Fuel Science and Engineering Program no longer offers an undergraduate option through the Department of Materials Science and Engineering. Poor undergraduate interest coupled with students who were beginning to "look" too much like specialized chemical engineers

upon graduation led to a decision to drop the department's undergraduate fuels option. Instead, the program now offers an option within the Department of Chemical Engineering. Professor Alan Scaroni, fuels program chair since April 1996 says, "chemical engineering students have a significant number of elective credits that can be used for our *Energy and Fuels Engineering Option in Chemical Engineering*." The courses are still materials science and engineering courses designated in the fuel science field and taught by fuel science faculty. The difference is that the students taking the courses will mainly be chemical engineering students. "Formalizing an arrangement with the chemical engineering department has allowed it to promote the fuel science courses so enrollment in the courses is increasing which is good for our program," says Scaroni.

At the graduate level, the Fuel Science and Engineering Program remains one of the strongest in the nation. The Ph.D. specialization in fuels is among just a handful in existence worldwide. Although the emphasis has traditionally been on the major fossil fuels (coal, oil, and natural gas), biomass and other renewables, along with pollution prevention and control, are playing an increasingly important role in the curriculum as they become important in the energy needs of the nation. The funding base for research in all these areas remains solid despite the decrease in the national funding picture.

The course work for the fuels option graduate curriculum is being completely revised. "We're moving away from a

traditional lecture style class toward a problem-based learning philosophy," says Scaroni. In this new approach graduate students will be given fuel science problems at the beginning of each semester and over its course will be asked to solve them while a faculty member or course instructor acts in the role of a coach. Each course will be team-taught by three faculty members because the problems are broad-based, multidisciplinary problems that cannot be solved by the expertise of just one faculty member. Collaboration is required. The new problem-based curriculum will be implemented fall semester 1997.

POLYMER SCIENCE AND ENGINEERING

The Department of Materials Science and Engineering offers both undergraduate and graduate specialization options in polymer science and engineering, and in addition has developed a polymer engineering option for students enrolled in the Department of Chemical Engineering in the College of Engineering. The undergraduate polymer specialization in materials science and engineering has recently been concentrating on keeping up with the growth and changes in the polymer industry.

Professor Paul Painter, polymer program chair, realizes that polymer engineers are in great demand and that students need to be trained to get jobs when they graduate. "We already do a great job of educating polymer scientists who want to continue their education beyond the B.S. level and go on

to graduate school," says Painter. "But we also needed to educate polymer engineers and do it well enough that they can find a job when they graduate." Painter has been working with the Pennsylvania College of Technology in Williamsport, Pennsylvania, to develop an undergraduate "polymer engineering and technology track." During their junior and senior years, students taking the polymer engineering and technology track will travel between the University Park campus and Penn College studying polymer processing technology.

Penn College was enthusiastic about collaborating on a program of this nature. It has the large-scale facilities and the faculty to provide students with the skills and experience they need to be polymer engineers. (The facilities and courses there are run by Penn State polymer program graduates.) The poly-



mer engineering and technology track also includes a summer jobs program that gets students into a working polymer engineering environment at the end of their junior year. Painter has recently submitted a proposal to the National Science Foundation to obtain funding for running this new program.

METALS SCIENCE AND ENGINEERING

Professor K. Osseo-Asare has taken over as chair of the metals science and engineering program. He replaces Professor Don Koss who was the program's chair for nine years.

Metals have been a stronghold of the department since the original metallurgy program was combined with ceramics and fuels to create the Department of Materials Science and Engineering in 1967. Over the years, many changes have been made to the program as new information, methods, and knowledge about metals has come to light. These evolutionary changes have been reflected in a dynamic program that can be described as science oriented metallurgical engineering. Recent changes have resulted from needs to improve students' general skills in writing and oral communication, computer lit-

eracy, and an emphasis on engineering design and open ended problem solving. Elements to build skills in these important areas have been added into the existing metals option curriculum.

The stability of the metals option curriculum has allowed Osseo-Asare to begin thinking about the program's future and

putting mechanisms in place for maintaining its strength. These efforts are being made with the philosophy that the metals option has a strong faculty component that has won numerous awards for its teaching and research activities, an alumni contingent that has a vast knowledge of the metals industry, and a metals-based industry that needs people who are well-educated in the area of metals science and engineering.

Initiatives that are being both considered and implemented on a small scale include inviting professional materials engineers to interact in a formal course structure with metals students and begin to open the industrial world and its requirements to them. Metals program alumnus Richard Wardrop, CEO of AK

Steel, and Robert Cardy, CEO of Carpenter Technology Corporation where many metals program graduates are employed, are two individuals who have visited Penn State to participate in this program.

Osseo-Asare has also initiated programs that will introduce high school students to the materials field and the area of metallurgy. At a recent talk given to the chemistry club at State College High, students were enthusiastic enough about the information they received that they have requested the opportunity to carry out research projects in conjunction with metals faculty. Drawing on these types of interactions, and especially involving alumni in the programs' activities, are elements that Osseo-Asare says

will lead to success as they have in the past with programs like the Cooperative Program in Metallurgy (or COOP as it is popularly called).

CERAMIC SCIENCE AND ENGINEERING

The Ceramic Science and Engineering Program is another strong program that has helped give the department its reputation as a leader in the materials field. The original Department of Ceramics Technology was established in 1923, and since that time has evolved into a strong science-oriented program. Professor David Green has been the ceramics program chair for five years.

Changes in the ceramic science and engineering spe-

cialty—at both the graduate and undergraduate levels—have been minimal over the course of the past five or so years. Most changes have corresponded to a specific need rather than a general revision of the discipline's core elements and have been addressed by hiring faculty with specific expertise. Dr. Long-Qing Chen was hired to fill a gap in the area of computer simulation and modeling. Drs. Susan Troler-McKinstry, Darrell Schlom, Clive Randall, and Wally Yarbrough for their interest in the broad field of electronic and photonic materials, which has led to the establishment of a new option in Electronic and Photonic Materials (see more below).

Green says that one of the good things about the ceramics

Continued on page 10

Upcoming Events

May 16-17

University Park Commencement Ceremonies

May 19-23

Ninth International Conference on High Temperature Materials Chemistry (HTMCIX)
Penn State University Park Campus
Program info contact:

Karl Spear, conference chair (814-863-0990)
To register contact: Chris Dufour (814-863-5110)
<http://www.cde.psu.edu/C&I/HTMC-IX/>

June 4-6

Short Course on Materials Coating Technology: Development, Processing, and Applications.
Penn State University Park Campus
Program info contact: Dr. Sam Zamrick (814-865-5241)
To register contact: Chris Dufour (814-863-5110)
<http://www.cde.psu.edu/C&I/materialcoatingtech/>

June 11-13

Colloidal Processing Short Course
Sponsored by the Particulate Materials Center
Penn State University Park Campus
For program info or to register contact
Robert Cornwall (814-863-6156)

August 4-8

Short Course on Corrosion: Fundamentals and Experimental Methods
Penn State University Park Campus
Program info contact: Dr. Barbara Shaw (814-865-7828)
To register contact: Chris Dufour (814-863-5110)
<http://www.cde.psu.edu/C&I/CorrosionShortCourse/>

Department Briefs and Penn State News

Cooperative Education Program: Is it for YOU?

Ever heard "we're looking for someone with a little more *experience*," *Experience Required*," or "Do you have any *experience*?" It's a strange fact of life that employers are looking for people with experience. But how does one get experience if no one will hire them because they don't have experience? One way to get the experience is through the Engineering Cooperative Education (Co-op) Program run through the College of Engineering. It's available to all Penn State students in engineering majors—including those in the College of Earth and Mineral Sciences—just so they can get a little of that much desired experience.

In the fall of 1995, the Department of Materials Science and Engineering began participating in the Co-op Program. Syamala Perisastry, who will graduate in May with her bachelor's degree, spent two consecutive Co-op semesters at Osram-Sylvania, in

Towanda, Pennsylvania. She says that her Co-op experience was "one of the best things I've ever done—it lets you know where you want your career to go, it teaches you to work with people of different educational and social backgrounds, and to apply the things you learn in college."

The Co-op Program works as a three-way partnership between a student, an employer, and Penn State. Students can begin participating in the Co-op Program anytime after their sophomore year through their senior year. They submit résumés to the program, attend workshops, and apply for Co-op jobs at participating companies. The employers are expected to provide students with challenging work in their major field of study, pay the students a professional-level salary, and provide training and supervision. Students can expect to gain a full year of work experience—usually two to four semesters of employment interleaved in any number of combinations with semesters of course work on campus. In cases where employers are

DEPARTMENT PROGRAMS. The word engineering doesn't appear in the college name Earth and Mineral Sciences, but students who enroll in the programs of materials science and engineering are learning fundamental engineering principles. From the time the department was formed from the metallurgy, ceramics, and fuels programs, engineering instruction has been an essential part of the curriculum complementing the basic science teaching. Today we offer science *and* engineering instruction in ceramics, fuels, metals, polymers, and a new option in *Electronic and Photonic Materials*.

MATERIALS SCIENCE AND ENGINEERING DEGREE OPTIONS

Ceramic Science and Engineering
Chair: David Green

Electronic and Photonic Materials*
Chair: David Green

Fuel Science and Engineering†
Chair: Alan Scaroni

Metals Science and Engineering
Chair: K. Osseo-Asare

Polymer Science and Engineering
Chair: Paul Painter

*Undergraduate Program Only

†Graduate Program Only

IMRL Gets New Director

Gary Messing, professor of ceramic science and engineering, has been named the new director of the Intercollege Materials Research Laboratory (IMRL). Messing assumed his new responsibilities on January 2, 1997. For now he will also continue to serve as director of the Particulate Materials Center (PMC) which will be relocating to new space at IMRL in late May. The PMC will operate like other centers within the structure of IMRL such as the Center for Dielectric Studies.

IMRL is a stronghold of the Penn State materials community. It was established in 1962 within the College of Mineral Industries (now Earth and Mineral Sciences), and six faculty in the Department of Materials Science and Engineering hold joint appointments between the department and the lab. A significant number of the graduate students in both the department and the Intercollege Graduate Program in Materials carry out their research activities at IMRL's facilities making it an important component of graduate level materials education. Funding for research activities at IMRL is currently about \$8 million per year with sixty percent of the funding coming from government and the other forty from industry.

Messing says that even with an \$8 million budget, "there is still potential for growth." He wants to increase the interdisciplinary activities that are carried out at the lab, and build on the strength of current joint activities with Penn State faculty in other departments and research units including the Applied Research Lab, the Pennsylvania Transportation Institute, and the Environmental Resources Research Institute. The enhanced diversity of this type of collaboration will benefit the lab as it expands into new growth areas of research.

Other activities along this line include cleaning out labs to remove aging equipment to make space for both new equipment that will be obtained through infrastructure funding grants and new equipment gifts, and for five new joint appointments that will be added to the lab's faculty. "These will be people who have their labs at IMRL," says Messing. Potential candidates for these positions include Penn State faculty, including research faculty currently located at IMRL, as well as individuals from outside of Penn State. Messing says that candidates for these positions must have research interests that are complementary to current lab activities which have traditionally been strong in areas including electronic and ferroelectric materials, ceramics, low temperature materials, thin films, hard materials, colloidal processing, and industrial ecology projects such as waste utilization. As funding trends in both government and industry continue to decline, the planned diversification and emphasis on collaborative research will help the lab to remain a strong and vital part of the Penn State materials community.

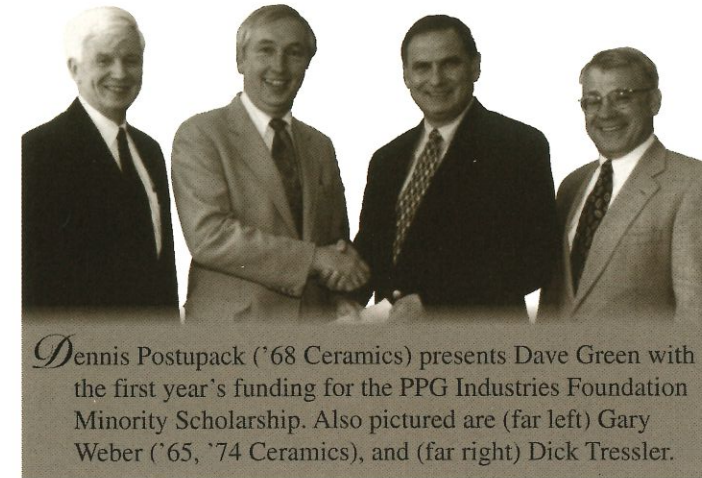
local, part-time employment while attending school is also an option.

Since the Department of Materials Science and Engineering began participating in the program, nineteen students have submitted their résumés to the Co-op Program. Nine of them have accepted employment with participating employers—still there are more than enough positions available for all materials science and engineering students. Not only does the Co-op Program provide students with valuable experience, but they have the opportunity to gain insight into their career objectives and develop relationships with potential employers. Kevin McHenry, a senior in the department's Metals Science and Engineering option, took advantage of the Co-op Program after his junior year. He spent two semesters at Carpenter Technology Corporation in Reading, Pennsylvania. "I wanted to see what an engineer does on the job," he says. "At Carpenter Technology I worked in the R&D department, in the tool and alloy group on alloys for aerospace applications, and in the special alloys group on alloys for electronic applications. It has helped me define what I want to do with my career."

Students return from their Co-op experiences to finish their course work on campus. Professor John Hellmann, Co-op Program advisor for materials sci-

ence and engineering says students are "much more mature when they return in that they've seen what they're being trained to do. That maturity spills into the classroom because they are able to be more selective in terms of what they think is important to know—therefore they become better students." Statistics also show that students who participate in a co-op program have employment rates five percent higher and initial starting salaries ten percent higher than students who don't participate in a co-op program

The Co-op Program is valuable to companies for reasons including reduced recruitment and training costs, employees who are better prepared for work, and the opportunity to check on-the-job performance of potential permanent employees—to name a few. For more information on participating in the Engineering Cooperative Education Program—whether you are a student or a company—contact the program director Anita Todd at (814) 863-1032, or Professor John Hellmann in the Department of Materials Science and Engineering: (814) 865-0163. If you prefer the World Wide Web visit the program site at <http://www.engr.psu.edu/coop/>. It could get you just what you're looking for: a little experience.



Dennis Postupack ('68 Ceramics) presents Dave Green with the first year's funding for the PPG Industries Foundation Minority Scholarship. Also pictured are (far left) Gary Weber ('65, '74 Ceramics), and (far right) Dick Tressler.

PPG Industries Funds Minority Scholarship

PPG Industries Foundation has agreed to provide \$2,500 per year for four years in support of a minority student in the Department of Materials Science and Engineering—Ceramic Science and Engineering option. The \$2,500 will be matched from the College of Earth and Mineral Sciences General Scholarship Fund to provide four years of in-state tuition for a minority student. The student will be recruited at the beginning of her or his freshman year, and will be guaranteed support for a full four years if he or she upholds the college's academic standards outlined for scholarship holders.

The first \$2,500 check was presented by Dennis Postupack, manager of technology commercialization at PPG's Fiber Glass Research Center to David Green, chair of the Ceramic Science and Engineering

option, at the Pennsylvania Ceramics Association meeting last fall.

The Pittsburgh based PPG Industries is a leading global producer of coatings, glass, fiber glass, and chemicals. Founded in 1883, the company's first plant was the first commercially successful plate glass factory in the United States. Penn State and PPG continue a long standing relationship with the funding of this scholarship.

AVX/Kyocera Foundation Endows Scholarship

The AVX/Kyocera Foundation has awarded the Department of Materials Science and Engineering \$200,000 to endow the AVX/Kyocera Foundation Scholarship in Materials Science and Engineering. On March 27, Dick Tressler, professor and head of the Department of Materials Science and Engineering, and John Dutton, dean of the College of Earth and

Mineral Sciences, met with Dick Rosen, president and CEO of AVX Corporation, and other company officials, to sign an agreement that will provide funds for recruiting undergraduate students and supporting those already enrolled in the department's programs.

AVX Corporation is a leading manufacturer of multilayer ceramic capacitors that are used in telecommunications and automotive electronics applications. Penn State is an important source of potential employees and research data for AVX Corporation—several Penn State graduates are employed by AVX in key positions at their offices in Myrtle Beach, South Carolina. The funding of this scholarship will help ensure that excellent students are able to pursue studies in materials science and engineering.

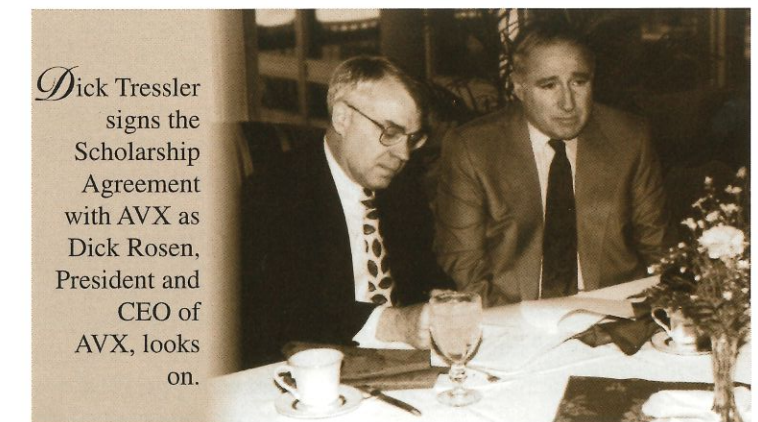
To be eligible for the scholarship, students must have achieved superior academic records or manifest promise of outstanding academic success. The scholarships will be

awarded for one academic year, and may be renewed for subsequent years if the recipient continues to meet the eligibility requirements.

Dr. Rodney Erickson Named New Vice President for Research

Dr. Rodney A. Erickson, dean of Penn State's Graduate School, has been named vice president for research. Erickson had been serving as interim vice president for research since his predecessor, Dr. David Shirley, retired in December. Erickson will also continue to serve as dean of the Graduate School.

As vice president for research, Erickson will oversee a \$350 million a year research enterprise that spans the University and provides real world experience to both undergraduate and graduate students through participation in the research carried out at all University locations. Penn State is tenth among all American universities in research funding, and ranks



Dick Tressler signs the Scholarship Agreement with AVX as Dick Rosen, President and CEO of AVX, looks on.

second in the nation, behind the Massachusetts Institute of Technology in industry sponsored research.

Erickson, in addition to his administrative responsibilities, is a professor of geography and business administration. He was head of the Department of Geography in the College of Earth and Mineral Sciences from 1990 to 1994. He has also served as director of the Center for Regional Business Analysis, and associate director of the Division of Research in the Smeal College of Business Administration.

CHANGES.

Continued from page 6

program is the number of scholarships and awards endowed by its alumni. This money has helped replace the scholarship money that has dried up from companies since the recession in the early 1990s. And although the number of students enrolling in the ceramics program is down slightly, Green says that there is still great interest from companies in Penn State's ceramics program graduates.

ELECTRONIC AND PHOTONIC MATERIALS

As the nature of materials science and engineering continues to evolve and grow, new programs have been added to the department as necessary. The Polymer Science and Engineering option was added to the department in the 1970s when polymers were becoming a major component of our society. Today, it's electronic and photo-

nic materials that are making the jump into our consciousness as an important element in the tools we use in our everyday lives. An undergraduate option in Electronic and Photonic Materials (EPM) has been added to the department to fill the need to educate students about the materials that make up the devices that drive our society in the Information Age.

The Electronic and Photonic Materials specialization had its first student enter the option in fall semester 1995. She will graduate this year along with two other students who entered the option shortly thereafter. David Green, who is also chair of the EPM program, says this is the first truly "interdisciplinary program within the department." The intent of the program is to involve faculty from all the other programs. Several ceramics program faculty members are also EPM faculty members, along with Dr. Suzanne Mohney from the metals program, Dr. Jerzy Ruzyllo who holds a dual appointment in materials science and engineering and electrical engineering, and a new dual appointment has just been created in EPM and polymer science and engineering.

Darrell Schlom, student advisor for the EPM program is really excited about this new option. "It's a growing area with a lot of jobs, and it's inherently interdisciplinary," he says. In fact the Semiconductor Industry Association reports that the semiconductor industry alone has grown more than 30 percent per year for the past two years. "High-tech is everywhere," Schlom adds.

Students taking the EPM option get an overview of the

field including synthesis, characterization, and uses of electronic and photonic materials. They take courses in electronics, physics, chemistry, computer programming, etc., and then are able to specialize in a particular area (solid state, electronic processing, or optics) with three technical elective courses.

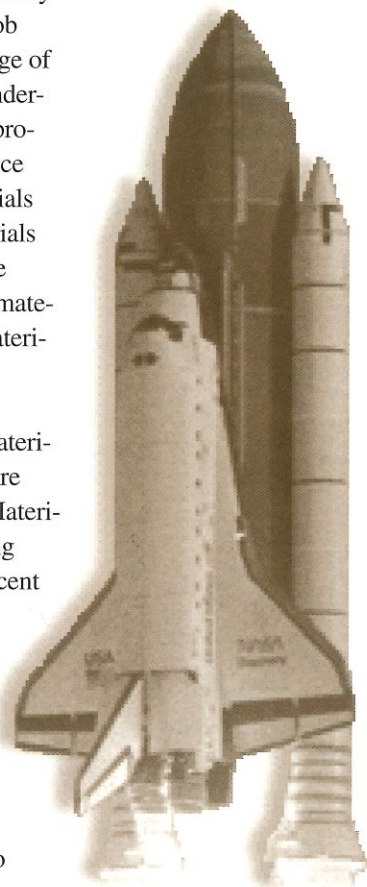
INTERCOLLEGE GRADUATE PROGRAM IN MATERIALS

At the graduate level, the revision and restructuring of the Intercollege Graduate Program in Materials (formerly known as Solid State Science), and its relocation to Hammond Building, has had a positive effect on the materials science and engineering department.

The Intercollege Graduate Program in Materials (or Materials program as it is commonly called) is headed by Dr. Rob Pangborn who is the College of Engineering's Dean for Undergraduate Education and a professor of engineering science and mechanics. The Materials program is a general materials degree that allows graduate students to obtain a broad materials education in either materials science or materials engineering. Many of the courses required for the Materials program's curriculum are taught by Department of Materials Science and Engineering faculty, and about fifty percent of the Materials program's students are advised by our faculty. The broad education that is available from the Materials program allows the Department of Materials Science and Engineering to provide specialized degrees

within its departmental structure. For example, as David Green says, "the focus of the materials program is general, so we were able to increase our focus on ceramic materials within the ceramics option."

The Department of Materials Science and Engineering has evolved over the years as necessary to serve the needs of students seeking a good education in the materials field. As the needs of the world, and therefore of students, continue to change, the department will continue to evolve and remain at the forefront of materials science and engineering—both in research and education.



alumni news

Hello Materials Science and Engineering Alumni. As promised, here is the first issue of our newsletter. I'm very excited about this new means of communicating with you, and it seems that you are as well. We had tremendous response to our Alumni News Request. So many of you responded that we can't include everyone in the first issue of the newsletter, but we'll get all significant responses published as soon as we're able. In the meantime, if you have any news, please drop us a line.

Thirties

Kenneth S. Cowlin ('39 Ceramics) retired from Ferro Corp. in 1984. He was chairman and director of both the Grinding Wheel Institute and the Abrasive Grain Association, and the president of the Crucible Institute.

Rulon L. Griffith ('32 Ceramics) is self employed at age 86 as an investor with his son Danny. He writes that he has been very successful thanks to his Penn State education.

Arthur C. Harris, Jr. ('35 Metals) was a metallurgist for Bethlehem Steel and Standard Steel Works, served in the U.S. Army and was the assistant and acting city manager of Fredricksburg, Virginia. He is retired.

John B. "Jack" Henry ('33 Metals) writes that he has retired from his career but now keeps busy with travel, staying alert, and volunteer jobs. He often thinks about the good friends from metallurgy classes.

Gilbert J. Mohr ('37 Ceramics) is retired. He wrote three technical texts, holds ten patents in the glass field, received the KERAMOS Manville President's Award for Excellence in Research, and is a Society of Glass Technology Fellow.

Harry H. Northrup ('35 Metals) spent 38 years with Republic Steel Corp., LTV Steel from the lowest position in the open hearth and electric FCE department to district manager.

James L. Sommerville ('32 Ceramics) is retired. He built

five glass plants across the eastern United States and Puerto Rico during his career.

Glenn F. Whiteley ('39 Metals) held positions ranging from chief metallurgist to general manager of three forging companies. He is retired.

Max K. Wiant ('38 Fuels) held many positions in the field of coal and steel. He is retired from LTV Steel in Pittsburgh, Pennsylvania.

Forties

Robert P. Aikman ('41 Fuels) joined Bethlehem Steel Corp. in July 1941 and worked as a research engineer and section manager in their research department, and as a manger of raw materials in the steel oper-

ations department until his retirement in 1981 after forty years and five months of service.

L. Dean Alspach ('49 Ceramics) retired from Brush Wellman, Inc. He studied beryllium containing materials for 42 years.

Howard O. Beaver, Jr. ('48 Metals) served as president and CEO and chairman and CEO of Carpenter Technology Corp.—a specialty steel producer. From 1978 to 1990 he was a Penn State Trustee and is currently Trustee Emeritus. Beaver has received the Penn Sate Distinguished Alumnus Award, the Horatio Alger Award, the McFarland and Stoughton Awards, the Benjamin Fairless Award, and is a Distinguished Life Member and Fellow of AIM-MPE.

Warren R. Beck ('42 Ceramics) retired from the 3M Co. He was a corporate scientist specializing in glass R&D, and received the 1995 American Ceramic Society's Samuel Gjeisbeek Award for developing a product of major significance to the ceramics industry.

Charles E. Brackbill ('49 Ceramics) was a ceramic process engineer at Murata when he retired.

Lewis C. Cavalier ('41 Metals) is retired from his position as metallurgical audits supervisor at U.S. Steel. From 1941 to 1945 he was also an associate professor, metallurgical extension at Penn State.

R. S. Crowell ('48 Metals) worked at U.S. Steel in a number of positions. He is currently a volunteer for education research at a public school which includes twelve years as a member of his local drug task force. He received a Recognition of Achievement Award and a USS Research Award of Merit from the AIM-MPE Pittsburgh Chapter.

Herbert H. Clarke ('40 Metals) is retired. He was a manager at Metallurgy International and held positions in metallurgy and quality control during his career.

W. W. Gotherman ('43 Fuels) is employed by Interstate Utility. He is a member of several professional societies and is a professional engineer in North Carolina and South Carolina.

Dorothy P. Enright ('48 Ceramics) worked for the last thirty years in the oil industry. She is self-employed as a consultant. She received the Meritorious Civilian Service Award from the U.S. Navy and was in Who's Who in American Women 1984-1985.

Thomas C. Evans ('41 Metals) spent forty years as a chief metallurgist and department superintendent at several DuPont plants.

Michael P. Fedock ('42 Ceramics) was the assistant head of Republic Steel Research Center's iron and steelmaking and refractory division. After retiring from Republic, the International Executive Service Corp. sent him to Brazil in 1989 for a four month consulting assign-

ment. Fedock is a Fellow of the American Ceramic Society and an Honorary Member of the Iron and Steelmaking Society.

W. L. Frankhouser ('47, '49 Metals) is retired. During his career he studied alloy and stainless steels, cast iron production, and materials development for all early nuclear power reactors.

Patrick D. Harrington ('47 Fuels) retired in 1987 after ten years in the cement manufacturing industry and 28 years in electric utilities. He was manager of fuel purchasing at Union Electric Co. which purchased \$600 million of coke, gas, and oil per year.

Stephen A. Herbert ('48 Fuels) was manager of the products applications department and the

fuel and lubricant department at Shell Oil until his retirement in 1986. Currently he is a consultant in the fuel and lubricant field.

William F. Hipple ('40 Metals) has retired from sales engineering of induction melting and heating applications including vacuum processes, high temperature (3300°C) processes, and some exotic metal processing.

John H. Hoke ('46, '48 Metals) was a Penn State metals program faculty member from 1960 to 1985 and the metals program chair from 1980 to 1985. He is now retired.

Edwin W. Hoover ('43 Metals) spent 52 years in the electroplating field. He is currently self-employed as a consultant. He received the Carl Houssnor AES Plating Award and holds a patent on acid copper plating.

Robert J. Johnson ('42 Metals) is retired. He held metallurgy and management positions in the metals field throughout his career, and is a member of ASM, AIME, ASME, and the British Iron and Steel Institute.

Neil Kantor ('47 Ceramics) worked in refractories, soft and hard ferrites, and permanent magnetic materials. He was general manager and vice president of Magno Ceramics for 26 years.

Avery L. Kearney ('42 Metals) is self-employed as a consultant after working in industry for 44 years. He received the American Foundry Society Service Award in 1994.

Thomas M. Krebs ('49 Metals) worked in numerous positions from metallurgist to senior vice president in carbon manufacturing, alloy, and stainless steel tubular products for the Babcock and Wilcox Co. He received the 1981 McFarland Award from the Penn State Chapter of ASM, the 1975 Distinguished Service

Award from the Penn State Beaver Campus, and the 1984 Distinguished Alumnus Award from Penn State.

Stewart M. Lang ('42 Ceramics) held positions in industry and government throughout his career until his retirement in 1983, and was then president of S. M. Lang, Inc. He is the author of more than forty publications, is a Fellow of the American Ceramic Society and received the U.S. Department of Commerce Silver Medal for contributions to oxide and nuclear materials development.

William H. Love ('47 Metals) held numerous metallurgical positions with Allegheny Ludlum for 35 years. He specialized in stainless, tool, airmelt, and high temperature valve vacuum melted steels.

Carl J. Lyons ('47 Fuels) spent 39 years conducting and leading research at Battelle Memorial Institute. He was manager of the department of chemistry and chemical engineering and associate director of research operations. He received awards for forming a Secretaries Council and for stimulating inventions.

Jack E. Morgan ('42, '47 Ceramics) worked in the DuPont electronics division as a process supervisor originally in china and glass decorating supplies, and eventually in thick film microcircuitry supplies until his retirement in 1983.

Robert A. Morgan ('44, '48 Ceramics) retired from his position as principal engineer of materials technology at Allied Signal-Bendix. Other positions he held include vice president of engineering at both Linden Laboratories and National Beryllid Corp., and production manager at Clevite Corp. where he worked in piezoelectrics.

William H. Myers ('48 Metals) is a registered professional engineer in Pennsylvania and worked in the steel industries in a variety of positions from engineer to vice president throughout his career. He is a life member of several societies, and is currently the chairman of the American Society of Senior Wire Rope Engineers. In 1987 he received the J. Edward Donnellan Award for outstanding contributions to the Wire Association International.

William S. Netter ('41 Ceramics) was involved in the abrasive wheel manufacturing industry until 1960. From 1960 to 1970 he worked in aerospace and nuclear vehicles and from 1970 to 1977 he worked in the cement industry as a technical manager. From 1977 until his retirement in 1983 he trained chemical engineers in the use of ceramic and cements with regard to corrosion.

Jack D. Ramaley ('42 Metals) has retired, but still does consulting work on a semi-regular basis. He has been married for 52 years, has four children and eight grandchildren.

Richard F. Spurck ('43 Ceramics) worked for 35 years in the electron tube and microelectronic packaging design field utilizing ceramic-metal sealing technology. He received the 1967 NEPCON Design Award for Dual-In-Line Microelectronic Packaging and holds a patent for leadless package and socket combination.

Samuel E. Tyson ('48 Metals) is self employed as a consultant for ASTM and lead assessor for the American Association for Lab Accreditation. He is a Fellow of ASTM.

Richard L. Walton ('49 Ceramics) spent 41 years at Lenox Fine China in a variety of positions. He writes that now he is retired and "never looks at fine

china of any kind." Walton spends his time on traveling, computers, Walton genealogy, the Home Owners Association, and is the cofounder of the South Jersey Shore Alumni Chapter "all in lower, slower Delaware."

Fifties

Ralph H. Aloï ('53 Metals) held production manager and production engineering positions with Keystone Carbon Co. (now Keystone Powdered Metal). He retired in 1991.

Earl R. Altomose ('58 Ceramics) worked in the corporate glass division of Brockway Glass Co. for 33 years in applied research, composition and raw materials control, and as a group manager of the production staff. He received a Common Stock Grant from the company for saving millions of dollars via job and other improvements.

Frank L. Arnold ('53 Metals) was a research metallurgist with Lukens Steel Co. and Reynolds Metal Co. for four years before becoming a Presbyterian Minister and Dean of a Theological Seminary in Brazil.

Ronald E. Bailey ('58 Metals) worked as a chief metallurgist and a manager of technical services at Bethlehem Steel. He is now a quality manager at Standard Steel in Burnham, Pennsylvania and is working on metallurgical engineering of railway products.

Alvin L. Barth, Jr. ('58 Metals) is a Maine State Representative. He was previously a science teacher and administrator for 28 years at the Gould Academy in Bethel, Maine, and an International Teaching Fellow in 1971-1972 in Melbourne, Australia.

Paul W. Berenbrok ('59 Metals) supervises all hot working

operations involved in processing titanium ingots into bars that are sold to jet engine manufacturers. He is employed with NF&M International in Monaca, Pennsylvania.

Herbert L. Black ('57 Metals) held various positions in R&D and technical service before his retirement from Cyclops Corp., a manufacturer of stainless, tool steels, and high temperature aircraft engine alloys.

Kenneth E. Bouldin, Sr. ('52 Metals) began his career as a student engineer in the National Plant of U.S. Steel in McKeesport, Pennsylvania. He worked in the rolling mills in various positions until his retirement as superintendent when the department was shut down in 1983.

Byron E. Carns ('50 Metals) worked for 37 years as a metallurgist at Kennametal, Inc. in Latrobe, Pennsylvania. He was primarily involved in powder and steel metallurgy, physical and mechanical testing failure analyses, and developmental work.

Vincent E. J. Chiochetti ('52 Ceramics) retired in 1991 from a career devoted to process R&D and energy and engineering management. He worked at Owens Corning, Bausch and Lomb, Pitt-Corning, and Ferro. Chiochetti is an American Ceramic Society Fellow, past president of the Association of Energy Engineers (Northern Ohio Chapter), and won an Energy Manager of the Year Award.

Alex F. (Ferg) Condliff ('53 Metals) has 38 years of metallurgical experience in all areas including research, engineering, manufacturing, and market development. He has experience with stainless steels, precious metals, nuclear alloys, magnetic alloys, and refractory of reactive alloys.

Karl Kimmerling ('79 Metals) Receives 1997 McFarland Award

Karl P. Kimmerling, vice president of manufacturing—steel at the Timken Company in Canton, Ohio, was selected as the 1997 David Ford McFarland Award recipient from Penn State's Chapter of ASM International. He was honored on April 26, 1997 at the chapter's annual banquet at the Centre Hills Country Club. Kimmerling presented the McFarland Lecture that Saturday morning titled "Profitable Growth Through Teamwork and Technology at the Timken Company's Faircrest Steel Plant."

Kimmerling received his B.S. in metallurgy from Penn State in 1979. He began his career with Timken's Harrison Avenue melt shop, and while carrying out his metallurgical and managerial duties there earned an M.B.A. from Kent State and a J.D. in corporate law from the University of Akron. In his current position he is responsible for all steel manufacturing operations of the Timken Company supporting annual steel sales of \$1 billion, four steel making facilities, and 3,000 employees.

Gary Weber ('65, '74 Ceramics) Receives Alumni Fellow Award

PPG Industries vice president for science and technology, Gary Weber, was honored as an Alumni Fellow at the College of Earth and Mineral Science's annual Obelisk Dinner in September 1996. It is the most prestigious of the Alumni Association's awards and has been designated by the Board of Trustees as permanent and lifelong.

Weber received his B.S. in ceramic science at Penn State in 1965 while supported by a Navy ROTC scholarship. After graduation he spent five years in the U.S. Naval Nuclear Submarine service as a line officer of Polaris and attack submarines in the North Atlantic. He returned to Penn State in 1970 and received his Ph.D. in ceramic science in 1974. After graduate school he began his career at Oak Ridge National Lab where he developed chemical flow lasers and carbon-carbon composite materials.

As vice president for science and technology at PPG, Weber is responsible for the science and technology activities of a \$7.7 billion worldwide business that serves the automotive, chemical, fiber glass, coatings, and architectural industries. Prior to joining PPG, Weber was a research scientist and executive with General Electric. His work there culminated in a widely acclaimed turn-key lighting machinery business in Budapest, Hungary that was cited for the quality of its technology transfer and praised for its environmental consciousness.

Dael E. Copeland ('59 Ceramics) is a process engineer at Imation Enterprises (formerly known as Minnesota Mining and Manufacturing).

M. Benjamin Dell ('51 Fuels) retired in 1982 after 29 years at Alcoa R&D. He and his wife Betty are still living in the house they built in O'Hara Township.

William F. Eberly ('50 Metals) was a metallurgist, salesman, and sales manager at Vanadium Alloys Steel Co. He was also CEO of Teledyne Metal Finishers Co. and special products department manager for Teledyne Vasco. He developed and patented friction welder and automotive accessories. Eberly is past chairman of the Philadelphia Chapter of ASM and past president of the Westmoreland County Penn State Alumni Association.

William J. Englert ('52, '53 Ceramics) was manager of several glass research divisions before his retirement at the senior scientist level in March 1992 from PPG Glass Research after 38 years.

Wayne C. Gracey ('50 Fuels) worked for 46 years in the natural gas industry. He spent seventeen years with People's Gaslight and Coke Co. in Chicago and seventeen years with the Institute of Gas Technology. The remainder of his career was spent as a consultant in countries including Iran, Sri Lanka, Pakistan, Argentina, Bolivia, Chili, and Algeria.

Ronald L. Griffith ('56 Metals) is currently employed at Burnham Corp. as a senior vice president. Previously he worked at Hamilton Watch Co. as a metallurgist and vice president, as well as in the U.S. Air Force and at U.S. Steel.

John D. Harrison ('52, '53 Metals) is a self-employed consultant in the field of TiNi shape memory and superelasticity. Previously he worked at Westinghouse Research Labs and Raychem Corp. He received the 1996 Paul M. Cook Technical Hall of Fame award from Raychem Corp.

M. Dean Houston ('57 Ceramics) worked on nuclear fuel development and regulation of nuclear power throughout his career. He is now retired.

Paul M. Kerschner ('51 Fuels) worked for Cities Service Research & Development Co./Occidental Petroleum for 36 years. He holds some forty U.S. and foreign patents in the field of synthetic lubricants, fuel and lubricant additives, and process development.

John Kosco ('48 Metals) is the director of research at Keystone Powdered Metal Co.

Frederick C. Langenberg ('55 Metals) has received three awards from Penn State—the McFarland Award in 1973, an Alumni Fellow award in 1977, and a Distinguished Alumni Award in 1989.

Donald R. Lowry ('56 Metals) retired from the U.S. Steel Division of USX Corp. after 35 years of service as a metallurgist and quality control manager.

Armand A. Lykens ('53 Metals) spent 36 years in the specialty steel business as a metallurgist in R&D, production, and technical service areas. He writes that he found his career rewarding, and at this point in his life he is satisfied with his career choice.

James R. McGresllis ('51 Ceramics) worked for 33 years with the carbon products division of Union Carbide in a number of positions. He is now retired and is an ISO-9000 Auditor.

John E. Megles ('53 Ceramics) was a senior development associate when he retired from Corning. He has 22 patents in glass, glazes, and glass ceramics.

Neal F. Mohler ('51 Ceramics) is retired from his position as president of Champion Brick, Inc., in Baltimore, Maryland.

James L. Rhoads ('52, '53 Ceramics) developed ceramic-metal sealing processes and designed ceramic-metal structures. He applied these skills to manufacturing electronic and solid state devices at RCA/Burle Industries.

Thomas Z. Richards ('51 Ceramics) retired from Norton Co. after 42 years in the grinding wheel industry. He served twenty years on the ANSI B7 Standards Committee.

Richard W. Ricker ('50, '52 Ceramics) held various positions with Alcoa, Ferro Corp., and Harshaw Chemical Co. before his retirement as a self-employed ceramic consultant. He was a 1968 Fellow of the American Ceramic Society.

Donald Schwartz ('55 Fuels) moved around the country quite a bit in his various academic and administrative positions. He was director of special projects at NSF, Chancellor of Indiana Purdue University at Fort Wayne, and Vice President for Academic Affairs and President of the State University of New York at Buffalo. When he retired as Chancellor of the University of Colorado at Colorado Springs in 1983 and as professor of chemistry in 1993 he continued to publish and as professor emeritus published more than 100 papers on the oxidation of coal, organic titanates, and higher education.

Eldon B. Shelly ('59 Metals) worked for Bethlehem Steel for 33 years in several engineering,

metallurgist, and managerial positions before his retirement in 1992.

Frederick A. Sotok ('56 Metals) is in the process of retiring from Prince Corp. after twenty years. He is currently the executive vice president. Formerly he spent seventeen years at General Electric in manufacturing management positions.

Kenneth H. B. Stauffer ('51 Ceramics) is self-employed as a motel and restaurant owner. Previously he worked in the ceramics industry at companies including Trenton Potteries and Pfaltzgraff Potteries.

James W. Taylor ('50 Fuels) retired as CEO of Dairyland Power in La Crosse, Wisconsin. He was voted 1974 Man of the Year by the Wisconsin Municipal Electrical Utilities.

Charles Thompson ('59 Metals) is the vice president of manufacturing and engineering at Union Electric Steel Corp.

Robert Turissini ('51 Metals) spent his entire career with Corning Inc. He worked for 23 years in international general management and was senior vice president—international upon his retirement in 1988.

Rolf Weil ('51 Metals) taught for 35 years at the Stevens Institute of Technology. His main research interest was the structure and properties of electrodeposits. He is a Fellow of the Electrochemical Society, and has won an AESF Scientific Achievement Award and a McFarland Award.

Thomas J. Whalen ('55 Ceramics, '57 Metals) retired after 38 years at Ford Motor Co. Research Labs. He specialized in ceramics and metals processing and statistical analysis and

faculty facts

David L. Allara, professor of chemistry and materials science, was elected a Fellow of the American Association for the Advancement of Science. The association is dedicated to the advancement of science and technology excellence across disciplines, and to the public's understanding of science and technology. Allara is also a co-author with Dr. Paul Weiss of the chemistry department and Dr. Jim Tour at the University of South Carolina on the widely quoted paper "Are Single Molecular Wires Conducting," that was published in *Science*.

William R. Bitler, professor emeritus of metallurgy, was elected a Fellow of ASM International. ASMI, otherwise known as the Materials Information Society, is focused on gathering, processing, and disseminating technical information that fosters understanding and application of engineered materials and their research, design, manufacturing, and use.

Long-Qing Chen, assistant professor of ceramic science and engineering, was coeditor of the proceedings *Mathematics of Microstructure Evolution* from the symposium "Modern Modeling of Microstructural Evolution." The symposium was jointly sponsored by ASM International, SIAM (Society for Industrial and Applied Mathematics), and TMS (The Minerals, Metals, and Materials Society). It brought together mathematicians, computer scientists, physicists, and materials scientists who all work on modeling and characterizing the evolution of microstructure.

Tarasankar DebRoy, professor of materials science and engineering, was presented the Faculty Scholar Medal for Outstanding Achievement in Engineering at the annual Penn State Awards Ceremony on April 6, 1997. The award was established in 1980

to recognize scholarly or creative excellence represented by a single contribution or a series of contributions with a coherent theme. A committee of faculty peers reviews nominations and selects candidates. The recipients are approved by Penn State President Graham Spanier. It is the highest honor Penn State confers upon faculty.

Dr. DebRoy received the medal for a series of studies that provide a quantitative basis for understanding

fusion welding processes. The safety and reliability of welded joints depends on the geometry, composition, and structure of the weldments. This knowledge is important because more than fifty percent of the industrial, commercial, and consumer products that make up the Gross National Product of the United States utilize welding. DebRoy's research will serve as a basis for producing defect-free, structurally sound, and reliable welds. It will help



Tarasankar DebRoy receives the Faculty Scholar Medal from Penn State President Graham Spanier. He was awarded the medal for his outstanding achievement and contributions to the field of metallurgical engineering.

Continued on page 20

transform welding from an empirical art to an engineering science.

DebRoy received his Ph.D. from the Indian Institute of Science in Bangalore, India, and carried out postdoctoral work at the Imperial College of Science and Technology in London, England and at MIT before joining the Penn State faculty in 1980. He received the American Welding Society (AWS) Adams Memorial Membership Award in 1992 for outstanding teaching, and the Wilson Research Award from the College of Earth and Mineral Sciences in 1993. In 1994 he received the AWS McKay Helm Award and in 1997 the AWS Charles H. Jennings Memorial Award both for best technical paper. He is a Fellow of ASM International.

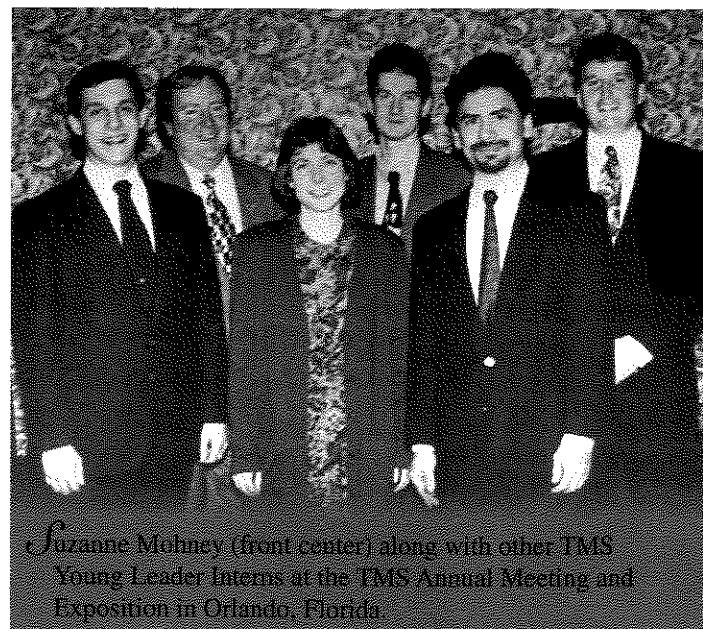
David J. Green, professor of ceramic science and engineering and chair of the Ceramic Science and Engineering and Electronic and Photonic Materials Programs, was awarded a three year National Science Foundation grant titled "Fracture Behavior of Porous Ceramic Substrates." The grant will run through the year 2000.

Digby D. Macdonald, professor of materials science and engineering, was recently elected a Fellow of the Royal Society of Canada.

Merrilea J. Mayo, associate professor of materials science and engineering, has been busy in the past year. In addition to her regular teaching and research activities she was appointed to the scientific advisory board of the Nanomaterials Research Corporation of Tucson, Arizona, became an associate editor of the journal *Nanostructural Materials*, was appointed to the National Research Council Advisory Panel on NIST, and became a new mother (and **Altat H. Carim**, associate professor of materials science and engineering, a new father) of Taran Keir who was born on February 28, 1997.

Suzanne E. Mohney, assistant professor of materials science and engineering, is a 1997 TMS Young Leader Representative. She recently participated in The Minerals, Metals & Materials Society 1997 Annual Meeting and Exhibition held in Orlando, Florida, on February 9-13. She attended the meeting as a guest of the Young Leader Program.

The Young Leader distinction is bestowed upon leading young professionals who are active in the materials fields and who express interest in taking a leadership role in the Society. As a Young Leader representative of the Electronic, Magnetic and Photonic Materials Division of



Suzanne Mohnney (front center) along with other TMS Young Leader Interns at the TMS Annual Meeting and Exposition in Orlando, Florida.

TMS, Mohnney was invited to attend several administrative and technical meetings and social functions. As one of ten 1997 Young Leaders she will also be able to take part in the ASM/TMS Materials Week Meeting in Indianapolis this fall.

Alcoa Professor of Solid State Science, **Robert E. Newnham** was presented with the 1996 David Turnbull Lectureship Award from the Materials Research Society at the Fall 1996 Meeting in Boston, Massachusetts. The award is given each year to one professor, selected from a national field of candidates, in honor of the person's accomplishments as a researcher and communicator. Newnham was presented the award "for pioneering the field of ceramic composites for electronic and optical applications, and in recognition of a distinguished career of

guiding students, lecturing, and writing." The recipient of the award is asked to speak as the Turnbull Lecturer at the MRS Fall Meeting, as well as at MRS Sections and University Chapters. Newnham spoke at the March meeting of the Penn State MRS Chapter.

During the past year Newnham was also the Plenary Lecturer for the International Union of Crystallography, a member of the National Academy of Science MEMs Committee, received an honorary doctor of science from Hartwick College, and became a distinguished life member of the American Ceramic Society.

Kwadwo Osseo-Asare, professor of metallurgy and chair of the Metals Science and Engineering Program, was awarded the James Douglas Gold Medal from the American Institute of Metallurgical Engineers

(AIME) for his "contributions to the fundamental understanding of interfacial phenomena in leaching, solvent extraction, and particle synthesis." Osseo-Asare obtained B.S., M.S., and Ph.D. degrees from the University of California, Berkeley. His Ph.D. research covered thermodynamic modeling and adsorption phenomena in aqueous processing. Prior to joining Penn State in 1976, he worked as a research metallurgist and project leader on nickel and cobalt extraction and refining at Amax Extractive Research Laboratories in Golden, Colorado. Currently Osseo-Asare's research interests range from interfaces to materials synthesis and processing, aqueous systems, and hydrometallurgy.

The award was presented to Osseo-Asare at AIME's 126th Annual Meeting in Denver, Colorado, on February 24, 1997. The James Douglas Gold Medal award was established in 1922 by AIME "to recognize distinguished achievement in nonferrous metallurgy, including both the beneficiation of ores and the alloying and utilization of nonferrous metals."

Carlo G. Pantano, professor of materials science and engineering received the 1996 Wilson Research Award. The Wilson Research Award was established in 1989 to honor

significant research accomplishment within the College of Earth and Mineral Sciences. The award is made possible by the bequests of Matthew J. Wilson, Jr. ('18 mining engineering) and Anne Coghlan Wilson, which also benefit the entire college through student loan programs and other faculty awards. Pantano also received the United Federal Bank Endowment Award for enhancement of undergraduate education.

Pantano is a leading glass scientist in the United States. His contributions to glass science include extensive research on glass surface characterization, development of oxy-carbide glasses and glass-ceramics, and the study of glass fiber surface chemistry and structure, as well as commercial glass studies.

James P. Runt, professor of polymer science, is co-editor of a new book called *Dielectric Spectroscopy of Polymeric Materials: Fundamentals and Applications*. It is published by the American Chemical Society as part of their Professional Reference Series, and will appear in May.

Chunshan Song, assistant professor of fuel science and engineering, was the co-chair of the American Chemical Society International Symposium on Advances in Catalysis and Processes of Heavy Oil

Conversion. The symposium was held in San Francisco, California, in April 1997. Song is also a co-editor of the book *Catalytic Conversion of Polycyclic Aromatic Compounds* published in September 1996 as Volume 31 of a *Catalysis Today* serial publication.

Karl E. Spear, professor of ceramic science and engineering, received the Solid State Science and Technology Award from the Electrochemical Society. Spear was presented with a silver medal, a bronze replica, and a \$5,000 check at the May 6, 1997, Awards and Recognition Ceremony. Immediately following the ceremony Spear delivered the Solid State Science and Technology Award Address titled "High Temperature Chemistry: A Key to Solid State Science and Technology."

The award, one of the Electrochemical Society's most prestigious, was presented to Spear for his contributions to solid state science and technology, particularly relating to nuclear fuel issues. Over the course of his career, Spear has published more than 145 technical papers and three patents, primarily on the application of the principles of high temperature chemistry, phase equilibria, and thermodynamics to predict and understand complex materials behavior in nuclear fuel materials,

metal boride systems, vapor deposition, oxidation and corrosion, interface reactions in composites, and diamond deposition.

Richard E. Tressler, professor and head of the Department of Materials Science and Engineering, was recently appointed to two National Research Council Committees. The National Research Council is the operating arm of the National Academy of Science, the National Academy of Engineering, and the Institute of Medicine.

The two committees are the Air Force Office of Scientific Research Materials Science Review Panel and a new National Materials Advisory Committee on "Advanced Fibers for High Temperature Ceramic Composites." The second committee will conduct a study to identify research directions for developing advanced fibers to use in ceramic composites.

Tressler also serves as the chairman of the University Materials Council, an organization of some 100 materials science and engineering department heads and administrators in North America.

student scoop

Penn State MRS Chapter Activities

The Penn State chapter of the Materials Research Society (MRS) has initiated several new projects in pursuit of its goals to improve materials education, research, and public awareness of the materials field.

Graduate Curriculum Improvement. The Penn State chapter of MRS is interested in improving the materials science curriculum at Penn State. They have developed a survey that will be distributed to department alumni asking them to evaluate the graduate education they received at Penn State. With feedback from the graduates they hope to identify the strengths and weaknesses of the programs, and provide suggestions for implementing improvements. Look for a survey near the end of this spring semester.

New Award. The Penn State chapter of MRS will begin awarding the "Significant Contribution Award" to one Penn State MRS member, either student or faculty, who has

made a strong contribution to the efforts of the chapter's activities.

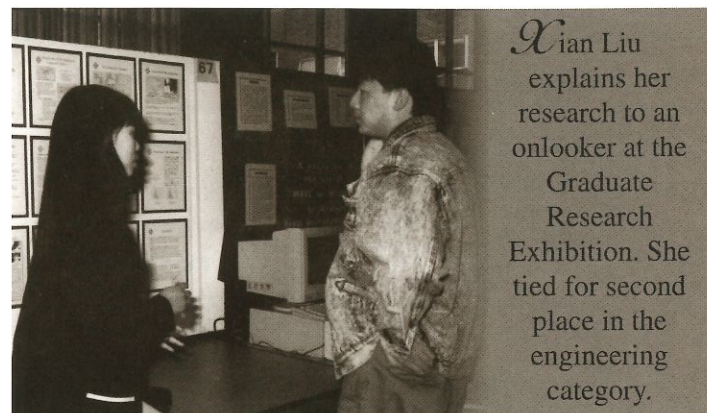
For more information about MRS, visit the MRS web page (<http://www.mrs.org>). If you would like to learn more about the MRS chapter at Penn State or become involved, contact any of the officers or write to: MRS at Penn State, P.O. Box 10106, State College PA 16805. The Penn State MRS chapter is developing its own web site. As more information is available we'll keep you updated.

Student Awards

Christopher Theis, (Darrell Schlom, advisor) received the 1996 Xerox Award for his Master's thesis *Investigation of Growth and Domain Structure of Epitaxial Lead Titanate Thin Films*. He was also awarded an ISHM Educational Foundation Grant for his proposal on the MBE growth of ferroelectric thin films.

Xian Liu, (Clive Randall, advisor) took second place

in the engineering category at the Penn State Graduate Research Exhibition that was held March 21 and 22.



Xian Liu explains her research to an onlooker at the Graduate Research Exhibition. She tied for second place in the engineering category.

Her poster was titled "Sub-micron X74 Dielectric Materials." Liu is a student in the Intercollege Graduate Program in Materials.

The Graduate Research Exhibition was established in 1986 to celebrate research as an essential element in graduate education. The goals of the exhibition are to highlight the importance of creative research, and the importance of communicating research and scholarship ideas to the general public. Congratulations Xian.

Undergraduate student, **Marissa Mock**, (Paul Painter, advisor) and gradu-

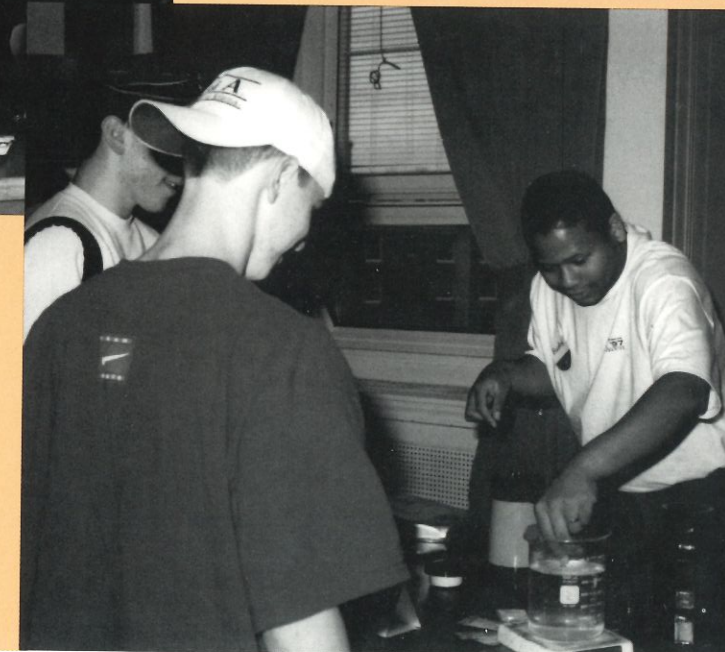
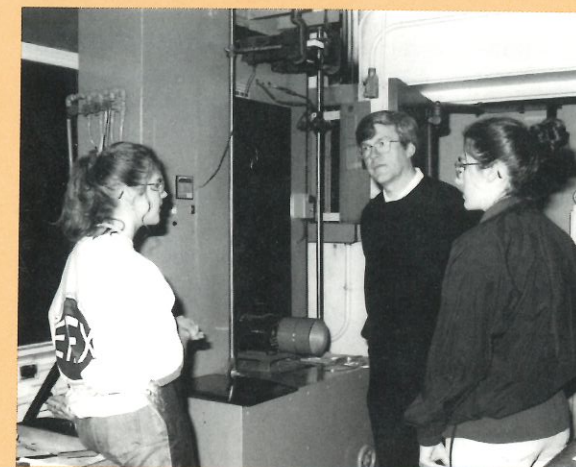
ate student, **George Pehlert** (Michael Coleman, advisor) were the 1997 recipients of the "Excellence in Polymer

Science Awards" sponsored for the past eleven years by Hoechst Celanese.

The award recipients are nominated by their peers and selected by the polymer program faculty for the award based on their research achievements and service to the polymer program. The awards were presented at an awards ceremony held on May 1.

Department Students Participate in EMEX and Engineering Open House

Students in the Department of Materials Science and Engineering took time out of their busy schedules on a warm, sunny Saturday to educate prospective students about the wonderful world of materials. The Earth and Mineral Sciences Exposition and the Engineering Open House give high school students from across Pennsylvania the chance to find out what a discipline like materials science is all about. The pictures on this page represent the activities that Department of Materials Science and Engineering students demonstrated as part of their education and research activities as materials scientists.



Clockwise from top: Mary Strezlecki discusses the finer points of fiber glass drawing; John Zielinski explains the polymeric properties of slime; Andre Wilson demonstrates shape memory alloys; and Professor John Hellmann speaks with a student and her father who are interested in materials education.

Continued from page 14

design of experiments. Whalen is a Fellow of both the American Ceramic Society and ASM International, and received the Alfred University Alumni Citation. He and his wife have eight children and nineteen grandchildren.

William E. Winter ('50 Ceramics) retired from Westinghouse Corp. where he developed manufacturing methods for high purity silicon to be used in semiconductors. He also operated a large semiconductor facility for integrated circuits, and developed microassemblies of semiconductors for use in many military and space related programs. Winter holds eight U.S. and foreign semiconductor patents and received the Westinghouse Presidents Award for significantly affecting corporate performance.

Lloyd G. Young ('51 Ceramics) retired as an engineering associate from Corning, Inc. after 44 years of service.

Frank R. Yurkoski ('53 Metals) retired from ACF Industries Inc. and holds continuing or life memberships in societies including ASM, AWS, AIME-TMS, ASQC, and ADPA. He writes that awards were difficult to schedule due to his parent and grandparent responsibilities. Five of his six children are married and they have twelve grandkids.



We've updated our pages on the World Wide Web. The new address is [http://](http://www.ems.psu.edu/MATSE/materials.html)

www.ems.psu.edu/MATSE/materials.html. For up to the minute information on department activities including workshops, seminars, lectures, conferences, and those things we do just for fun, look us up on the Web. Also, remember to sign the EMS guestbook. You can link to it from the materials science and engineering pages.

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