A REORGANIZATION REPORT
FROM THE DEPARTMENT HEAD...

Dear Alumni and Friends,

In our June 1999 newsletter, I wrote about the dynamic nature of our discipline and the need for us (Penn State) to adapt our administrative structure so that the emerging subdisciplines could flourish alongside the traditional ones. Mike Coleman headed a committee that studied models for the administration of large departments such as ours.

The committee members concluded that some form of reorganization would most likely be beneficial for our department, and suggested models that we should consider. From the discussions that ensued, a new administrative structure emerged. Effective January 1, 2000, we are operating under this new structure.

The essential features are as follows. The academic administration is organized into undergraduate and graduate programs with a coordinator overseeing each activity. The departmental committees are organized under these two administrative entities. A five-member executive committee functions as a policy making committee dealing with planning, finances and investments, faculty searches, promotion and tenure, space allocation and facilities, etc.

We continue to offer specialization in three subdisciplines as formal options within the Materials Science and Engineering degree as we have done for several years. We also continue with ABET accreditation for the subdiscipline options—Ceramic Science and Engineering, Metals Science and Engineering, and Materials Science and Engineering; the last one includes our Electronic and Photonic Materials specialization and our Polymer Science and Engineering specialization.

Donated funds and endowments earmarked for any of these specializations will continue to support the specific activity identified by the donor.

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Fuel cells can be thought of as batteries that never die as long as they are supplied with proper fuel. As with batteries, fuel cells use an electrochemical process involving two electrodes, an anode and a cathode, separated by an electrolyte. They convert the energy from hydrogen-rich fuels—natural gas, coal-derived gas, landfill gas, biogas, or alcohol—directly into electricity at an efficiency of 65 percent. In combination with gas turbines, the efficiency reaches 85 percent.

However, proponents for the use of fuel cells as an alternative, environmentally friendly technology that could help meet even greater power generation demands from both the private and business sectors face a Catch-22. A major expansion in manufacturing capability would bring mass-produced fuel cells into a cost range that is competitive with traditional power sources, but putting that expanded capability within industry's grasp requires substantial manufacturing-related cost barriers to be overcome. It's a vicious circle: Can't make more fuel cells without lowering costs...can't lower costs without making more fuel cells.

THE PENN STATE CONNECTION

Although it's not a solution to the overall problem, researchers in Penn State's Department of Materials Science and Engineering have invented a technique that offers the hope of making the manufacturing of one kind of fuel cell cheaper and more efficient than in the past. The team reports that the technique works better—and at least cost—than the traditional alternative because it replaces a room-sized, high vacuum device involving complicated gaseous chemistries with a simpler arrangement of a beaker containing particles in acid and an agitator clip.

The trio that tackled the challenge includes Rajendra N. Basu, a postdoctoral scholar in the Materials Research Laboratory, and Clive A. Randall and Merrill J. Mayo, both associate professors of materials science and engineering.

They used electrophoretic deposition (EPD), a process in which charged particles dispersed in a suitable suspension are driven to move towards an oppositely charged electrode under an applied electric field. The particles' deposition on the counter electrode results in a desirable particulate coating that is later sintered.

“The EPD technique is extremely simple and inexpensive,” Basu explains. “It has been used for many years to fabricate high green density ceramic bodies/coatings with various shapes for industrial applications ranging from thin film phosphor coatings to bulk lamp envelopes.”

However, the best efforts in the past five years of several non-Penn State groups to use EPD or similar, low cost
Future of Fuel Cells for Consumer Use Remains to Be Seen

Pennon State's Digby MacDonald, professor of materials science and engineering, has an equal opportunity attitude toward the many varieties of fuel cells at large in the world today. He's worked on those whose technical challenges range from mostly overlooked to heavily researched.

For instance, Macdonald is currently involved in projects with Penn State colleagues Harry Allcock, an Evan Pugh professor of chemistry, and Serguei Lvov, associate professor of energy and geo-environmental engineering, studying proton exchange membranes for methanol-powered fuel cells using thermally stable polyphosphazenes. He is also interested in such non-hydrocarbon powered fuel cells as a zinc-air variety now under development. However, he says that the day when the average consumer will use mass-produced fuel cells for anything as prosaic as automobiles or home heating is still in the future.

"We can probably get a fuel cell's cost down to maybe $1,000 per kilowatt, which is a tenfold higher cost than for internal combustion engines for a very dubious environmental benefit," he notes. "I say 'dubious' because all of the hydrogen-based fuel cells still put out carbon dioxide, even if at a somewhat lower rate than other power generating techniques.

All fuel cells, except those that use hydrogen directly or that employ the direct oxidation of the fuel in the fuel cell stack, must reform the hydrocarbon into hydrogen and waste products—such as carbon monoxide and carbon dioxide. Macdonald notes that reforming on board is a difficult technology that requires highly durable, cost-effective catalysts.

"In my opinion, only the direct methanol, or some other direct liquid, fuel cell—which does not employ a separate reformer—makes any sense for vehicles as far as conventional fuel cells are concerned," he says. "But conventional reforming fuel cells will definitely find use in stationary applications. They have a bright future in medium scale power generation at fixed sites."

Meanwhile, one type of non-hydrocarbon fuel cell that appears close to being commercialized is the zinc-air device produced by the California firm Metalic Power. It may be the most advanced of its sort now available, says Macdonald, who is a member of the company's board of directors. The company claims to be on target for a 2002 launch of a recyclable, environmentally safe fuel cell that recharges within minutes. Current configurations of the product could be used for utility carts, forklifts, auxiliary power for trucks and recreational vehicles, and telecommunications backup power.

How Thin Can Things Get?

Research Reports by Andra Elyse Messer—Penn State Science, Engineering & Research Communications

Circular Transformers May Lead to Thinner Laptops, TVs

Thinner laptop computers and flat-screen TVs may be possible with a simple change in the geometry of piezoelectric transformers. As an alternative to conventional electromagnetic transformers that are big, very heavy, producers of magnetic noise, a light-weight, circular configuration was made at Penn State with ingenuity provided by Konjii Ichinos, professor of electrical engineering, Burhanettin Koc, postdoctoral associate in electrical engineering, and Yongkang Gao, graduate student in materials science and engineering. Their circular transformer is made of a lead, zirconium, titanium ceramic doped with manganese and cerium. It provides a voltage step up ratio of about 60— 100 times the power used by piezoelectric transformers—and takes up the same volume and weighs the same as rectangular designs. The team reported its findings to the Materials Research Society in December.
DEPARTMENT DETAILS

Earth and Mineral Sciences Appoints Public Information Director

June Heywood, founding editor of *Penn State MATSE*, has left the Department of Materials Science and Engineering to serve as director of public information and alumni relations for the College of Earth and Mineral Sciences. In this position, she is responsible for all of the college’s alumni programs, including its GEMS (Graduates of Earth and Mineral Sciences) Alumni Society. In addition, she directs communication strategy and produces publicity materials, including the *EMS Bulletin* and other college-level publications.

In her new duties, Heywood fills the position left vacant by the retirement of Judith Kiwalaas. Heywood joined the Department of Materials Science and Engineering as its first writer/editor and alumni coordinator in 1996. A graduate of Penn State’s English program, she had also earlier worked with the Penn State Materials Research Institute.

New Writer/Editor and Alumni Coordinator for Department

Following June Heywood’s promotion, Gary W. Cramer is the new writer/editor and alumni coordinator for the department. A former newspaper journalist in Lancaster, Pennsylvania, Cramer joined Penn State in 1989 as a writer/editor promoting faculty research topics to the media for the Department of Public Information. He later worked in the Department of Development Communities and Special Projects. In that capacity, he wrote and edited publications involving Penn State’s history and contributions to society, and private gifts to the University’s Grand Destiny fund-raising campaign. He earned his bachelor’s degree in journalism from Penn State in 1987.

Hellos, Goodbyes

Since the last issue of *Penn State MATSE*, the department staff has had some other hellos and goodbyes, as well. Deb Brown joined our editorial staff to concentrate on grants and proposals after working for the Materials Research Laboratory on campus for several years. Deb replaced Patty Prestash, who joined the University’s Office of Sponsored Programs. Cindy Lake became the new staff assistant in the metals science office, replacing Shelly Kachik, who went to the College of Engineering to work for the Department of Electrical Engineering. Also going to our sister college to work in the Department of Mechanical Engineering was staff assistant Jen House, who helped throughout our department as needed.

Bradt Receives Award for Work at Alabama

Last spring, former department head and ceramic science faculty member Richard C. "Dick" Bradt received the Barnum Distinguished Faculty Award for 1998 from his current academic home at the University of Alabama. Bradt heads the Department of Metallurgical and Materials Engineering at UA, which he joined in 1994. In an article in the UA faculty/staff newsletter, *Dialog*, Bradt cited a new corporate-funded scholarship endowment, a surge in freshman enrollment, and an alumni-led modernization effort for the university’s metalastaging laboratory as highlights during his tenure in the UA department. He first joined Penn State in 1967, and led Materials Science and Engineering from 1979 to 1983.

1999 Pennsylvania Ceramics Association Forum: Ceramic Process Technologies for Manufacturing Efficiencies

In September, the annual forum of the Pennsylvania Ceramics Association attracted attendees from nearly 20 firms and speakers from industry and academia to the University Park campus. Above, the audience prepares for the next speaker during an afternoon of presentations. Right, Vito Russo, president and CEO of the Ben Franklin Technology Center of Central and Northern Pennsylvania, delivers the keynote lecture. Below, conversation ensues at the forum banquet amongst Concurrent Technologies’ Arthur Garson and Kathryn Curt, center, ceramics science and engineering students Lisa Friedman and professor David Green, right, PPG Glass Technology Center’s Jeffrey Yigdal, left, and Alcoa’s Doug Weirach.

Hirth Puts Nelson Taylor Lectures’ Focus on Dislocations

Dislocation theory was the featured topic when John Hirth, professor emeritus of materials science and engineering at Washington State University, presented the 1999 Nelson Taylor Lectures in October at the University Park campus. Hirth’s expertise in the defects that form in crystalline solids, captured in the textbook *Theory of Dislocation*, attracted appreciative audiences of faculty, staff, and students. In addition to earning numerous awards from professional societies throughout his career for his teaching skills, Hirth was elected to the National Academy of Sciences in 1994.

The Nelson Taylor Lecture Series, sponsored by the Department of Materials Science and Engineering, was established in 1969 to honor the memory of Professor Nelson W. Taylor (1899–1965) who was head of Penn State’s Department of Ceramics from 1933 to 1943.
ALUMNI ANNALS

Halchak Named McFarland Award Winner for 2000

John A. Halchak ('62 Metals) will receive the 2000 David Ford McFarland Award for Achievement in Metallurgy from the Penn State chapter of ASM International at an award lecture/banquet on April 15, 2000, at University Park.

A native of Pennsylvania, Halchak is director of material applications at Rocketdyne Propulsion and Power, a part of the Boeing Company, in Canoga Park, California. He has been a leader in the employment of several titanium based alloys to construct modern rocket engines, and has worked on such high-profile projects as Apollo-Saturn V, the Delta launch vehicle, Peacekeeper, and the Space Shuttle. He currently leads a variety of liquid rocket engine, high-energy laser, and Space Station electrical power systems projects. The McFarland Award is named in honor of the head of the Department of Metallurgy at Penn State from 1920 to 1945.

National Academy Honors MacChesney

Although John B. MacChesney got his Ph.D. in geochemistry from Penn State, it is his years of work in materials that earned him a spot in the first trio of materials engineers to win the Draper Prize for outstanding engineering contributions to the welfare and freedom of humanit last fall. MacChesney received the prize from the National Academy of Sciences in recognition of his invention of the modified chemical vapor deposition process, which led to the manufacturing of practical, low-cost optical fiber systems to carry voice, data, and images via light pulses encoded with digital information. He developed the process with his Bell Laboratories colleague, P. B. O'Connor, in the early 1970s. While at Penn State, he studied under such faculty members as E. F. Osborn, A. I. Munn, and Rastum Roy. In November, he was on campus to present a lecture on "The Optical Fiber Revolution" and attend a reception in his honor.

Spriggs Receives Alumni Achievement Award in Ceramics

Richard M. Spriggs ('52 Ceramics), an internationally renowned contributor to ceramics research and instruction, received the 1999 Penn State Alumni Achievement Award in Ceramics during the September meeting of the Pennsylvania Ceramics Association at University Park. A native of Washington, Pennsylvania, Spriggs began his studies at the Penn State Mont Alto campus. He is a professor emeritus of ceramic engineering at Alfred University in New York, a past president of the American Ceramic Society; director of the New York Western Technology Development Center; and author of many publications on such topics as ceramics microstructure, sintering, and forging by thermomechanical processing.

Laura Davis Bittle ('92 Polymer) is a senior chemist at Engineered Polymer Solutions, Inc., in Los Angeles, California, a division of the Valspar Corporation. She recently received her M.B.A. from Webster University in Irvine, California.

John Manko ('95 Ceramics) is a metallurgical engineer with Armaco Specialty Flat Rolled Steels in Butler, Pennsylvania. Much of his work has been focused on product development for TCH, a grain-oriented silicon steel used in the manufacture of stacked distribution transformers.

Devang Jashubhai Naik ('98 Metals) is working for the heavy engineering complex of Larsen & Toubro Ltd., in Hazira, India, and living in the nearby town of Surat. The complex manufactures equipment for nuclear and thermal power projects; chemical, petrochemical, and fertilizer industries; and aerospace, oil exploration, and marine-related sectors.

Erik O. Wagg ('90 Ceramics) was installed as vice president for member services of the American Ceramic Society last spring. He is technical services manager at Reusche & Co. of Greeley, Colorado, where he oversees new product and design development and manages raw material and finished product quality control. He also serves on the ASTM Sub-committee on Test Methods for Ceramic Whitewares and Related Products.

George R. White ('94 Metals) is at 493 Scott Drive, West Chester, PA 19380. He works for Beemer Precision Inc.

UPCOMING EVENTS

March 6–10, 2000
Penn State Spring Break

March 25, 2000
College of Earth and Mineral Sciences Expo (EMEX)
University Park

April 15, 2000
59th Annual McFarland Award Lecture and Banquet
Featuring John A. Halchak ('62 Metals)
Metals Science Program
University Park

Blue/White Game
University Park

April 28, 2000
Spring Semester Classes End

May 13, 2000
Undergraduate Commencement for College of Earth and Mineral Sciences
7 p.m. in Eisenhower Auditorium
University Park

May 14, 2000
Graduate Commencement
5:30 p.m. in Eisenhower Auditorium
University Park

May 15–June 23, 2000
First 6-week Summer Session Classes
University Park

If you have an event for the Upcoming Events Column, please contact the Penn State MATSE editor for consideration.
Pennsylvania Calls New EPM Faculty Member Home Again

It's a good thing that the intense football rivalries between Penn State and certain other universities do not extend into the institutions' laboratories, or else Joan Redwing might not be calling herself a Penn Stater these days.

Thirteen years after leaving Pennsylvania with a bachelor's degree in chemical engineering from the University of Pittsburgh in hand, and five years after earning a Ph.D. in the same field from the University of Wisconsin, Redwing arrived in Happy Valley last fall as Penn State's newest assistant professor of materials science and engineering. Along the way, the Pittsburgh area native worked for General Electric in Schenectady, New York, and for Advanced Technology Materials in Danbury, Connecticut, and Phoenix, Arizona.

Her teaching is concentrated on the electronic and photographic materials area, and much of her current research delves into the epitaxial growth of gallium nitride and related wide bandgap materials. Redwing's previous work on such topics as metalorganic vapor phase epitaxy of compound semiconductors, gas phase and surface chemistry of epitaxial growth, and growth and characterization of heterojunction devices has resulted in more than 40 articles in refereed journals and conference proceedings as author or co-author. She has also presented four invited talks, including one at the Spring 1999 Materials Research Society Meeting. She co-owns patents on high brightness ultraviolet-green electroluminescent devices, the formation of non-columnar deposits by chemical vapor deposition, and articles having coatings of fine grained and/or equiaxed grain structure.

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nonprofit educational organization. He was recognized for his professional contributions and service to the society, which focuses on phenomena related to electrochemical and solid state science and technology.

Darrell Scholk, associate professor of materials science and engineering, recently received the Young Author Award from the American Association for Crystal Growth. The award recognizes his achievements in developing molecular beam epitaxy techniques for oxide thin films, and in depositing epitaxial films of ferroelectric and superconducting oxide materials with atomic layer control.

Richard E. Tessler, professor and head of materials science and engineering, has been appointed to the National Research Council's (NRC) Committee on Materials Research for "Defence-After-Next." The twelve-member committee includes researchers with a wide range of expertise in the military, corporate, and academic environments. It will undertake a three-year study to identify the kinds of materials and processing research and development that are crucial for addressing 21st century defense needs, based on Department of Defense requirements. Tessler was chosen for his work in structural ceramics and ceramic composites, as well as his knowledge of Army and aerospace systems. A former Captain in the U.S. Air Force, he has served on several other NRC committees and on a review panel for Air Force materials research projects.

Susan Troller-McKinstry, associate professor of ceramic science and engineering and associate director of the Materials Research Laboratory at Penn State, will receive the 2000 Robert L. Coble Award for Young Scholars from the American Ceramic Society at the society's annual banquet in May. The award recognizes outstanding scientists who are conducting ceramics research in academia, industry, or government-funded laboratories. Troller-McKinstry focuses much of her research on the areas of bulk and thin film ferroelectrics for piezoelectric and dielectric applications and optical characterization. She was also recently elected secretary/treasurer of the society's Ceramic Education Council.

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October during the society's High Temperature Materials Division meeting in Honolulu, Hawaii. She presented her award address on "Oxidation and Metallization of Group III Nitrides for High Temperature Devices" at the society's III-V Nitride Materials and Devices symposium.

Robert E. Newham, professor emeritus of solid state science at the Materials Research Laboratory, delivered the keynote lecture on "Ceramic Engineering in the 21st Century" at the International Symposium on Current Global Status of Ceramics in Tokyo; received the International Prize of the Japan Fine Ceramics Association in recognition of a U.S.-Japan student exchange program that he initiated and his contributions to the technical literature of electroceramics; delivered the ASME Adaptive Structures and Materials Systems Prize Lecture at the American Institute of Aeronautics and Astronautics Conference in St. Louis, Missouri; and lectured on "Domains in Smart Materials" at the Workshop on Dynamics of Interfaces held at the Los Alamos National Laboratory.

Principal investigators on projects recently approved for funding by the National Science Foundation's Industry-University Center for Glass Research include Carlo Pantano, professor of materials science and engineering, on "OH in Silica: Effect on Bulk and Surface Structures" (with Alfred University's Alastair Cormack), "Monomeric and Polymeric Organofluorocarbon Multifunctional Silanes on Glass," and "Cheninotribed Water on Commercial Glass Surfaces"; David Allara, professor of polymer science and engineering, on "Analysis of Chemical Interactions and Effect of Water and Additives at the Polymer-Multicomponent Glass Interface"; and David Green, professor of ceramic science and engineering, on "Flaw-Tolerant Tempered Glasses." Thirty-four corporations aid the CGR.

Jerzy Ruzyllo, professor of electrical engineering, has been elected a fellow of the Electrochemical Society, an international...
NEIGHBORHOOD NOTES

Project to Demonstrate Ironmaking's Importance to Region
Metallurgy was an important part of life in the University Park campus area long before there was a College of Earth and Mineral Sciences to offer a degree in the subject. In 1855, land and money donated by Moses Thompson, a Centre Furnace ironmaster, and his partner James Irvin, led to the establishment of the Farmer's High School, which eventually became Penn State. To educate people about this facet of the Centre Region's history, Penn State students and professors are working with the Centre County Historical Society to develop a walking path that will demonstrate the scope of local ironmaking during the 19th century. The project is part of a grant recently given to the society by the Pennsylvania Historical and Museum Commission. One point planned for the path is the site of the Centre Furnace, near the eastern edge of the campus along Route 26. The path will eventually link the furnace site and the nearby Centre Furnace Mansion with a natural greenway being developed throughout Centre County's most heavily populated watersheds.

High School Science Teachers Learn About New Materials
High school science teachers from across the state learned about advanced materials such as new kinds of plastics and liquid crystals—and ways to incorporate advanced materials into their curricula—at a week-long workshop last summer at University Park. During the workshop, the teachers explored the science of materials discovered, invented, and developed during the past two decades, and new materials expected to be developed during the next two decades. Applications the teachers studied included body implants that can carry out medical tests and release appropriate doses of medication, house windows that control the flow of heat and light in response to weather and human activity, tennis rackets with automatic adjustments for overhead smashes and drop shots, and dental braces made from materials that automatically return to their original shape if they are bent. The summer workshop was one of four for Pennsylvania teachers sponsored by three Penn State organizations: the Pennsylvania Space Grant Consortium, the Eberly College of Science, and the College of Earth and Mineral Sciences.

Enrollment Flat, According to Plan
Honoring its commitment to slow enrollment growth, Penn State recently announced that its official enrollment for the 1999 fall semester was 80,873, with undergraduate enrollment virtually identical to the previous year. Even though Penn State received a record number of applications for the year, and continues to be a popular choice with prospective students, the University is following a plan to control enrollment growth, as announced when it reorganized its campuses in 1996. The 1999–2000 undergraduate enrollments came in on target, with a small reduction in new freshmen offset by a small increase in upper-division students. Graduate enrollments—including enrollment at Penn State's College of Medicine and The Dickinson School of Law of The Pennsylvania State University—are up by 105 students.

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Each of these specialties will have a subset of our faculty (a panel) identified with it, and a chairperson of each panel will act as the "spiritual leader" to be sure that we maintain our contacts with the relevant professional society(ies), industrial firms, alumni groups, and student groups.

Since our committees will now function as department-wide committees (curriculum committee, for example), we expect a more unified set of requirements to emerge for the various specializations. We expect more courses to be taught in common (for example, laboratory courses), and we expect new subdisciplines to be organized (e.g., biomaterials).

When you next visit Steidle Building, you will find all department offices located on the first floor with the undergraduate and graduate offices flanking the main entrance to the building. We are also renovating and expanding the student computer laboratory and the student commons room contiguous to the department offices.

The faculty members who have previously agreed to serve in these roles identified above are listed in the box below. Our staff has embraced our new structure and is busy designing new workspaces and realigning the critical functions that only a dedicated, competent staff can perform.

I'm personally confident that we can now change and evolve to meet the challenges of education and research in the 21st Century with our new structure. I welcome your comments and advice as we move along this new path.

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

Who's Who in the Reorganized Department

Department Head: Richard E. Tressler
Undergraduate Coordinator: Paul C. Painter
Graduate Coordinator: Long-Qing Chen
Executive Committee: Richard E. Tressler, Paul C. Painter, Long-Qing Chen, Diby D. Macdonald, Susan A. Trollier-McKinstry
Panel Chairpersons:
Ceramics – John R. Hellmann
Electronic and Photonic Materials – Atif Carim
Metals Science and Engineering – Kwadwo Osseo-Asare
Polymer Science and Engineering – James P. Runt

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STUDENT SCOPS

COOP Puts Spotlight on Student Research Projects

In October, the 1999 annual meeting of the Cooperative Program in Metals Science and Engineering (COOP) brought company representatives, faculty, and students together to exchange a wealth of technical information. COOP serves as a resource for businesses in need of access to a broad range of knowledge and activities related to the processing, properties, and uses of metals and alloys. A highlight of the meetings was the presentation by graduate students of their research results. What follows is a list of the winning projects in the oral and poster presentation categories for 1999, as voted on at the meeting by COOP members. For more information on any of these research efforts or the program in general, please contact the Metals Science and Engineering office at (814) 865-5446 or by E-mail at coop@ems.psu.edu or visit the COOP website at http://www.ems.psu.edu/Metals/coop.html.

ORAL PRESENTATIONS

First Place—Andre L. Wilson, "Sub-Solidus Liquation in Aluminum Age-Hardenable Alloys: A Microstructural and Kinetic Study", Second Place—John DeLuca, "Pt Electrical Contacts to n-Type GaN" (sponsored by the National Science Foundation); Third Place—Tabetha A. Dobbins, Thermal Spray Yttria-stabilized Zirconia (YSZ) Coatings for Optimal Thermal Barrier Coating.

Among the winners of the COOP events for oral and poster research presentations were, from left, graduate students Bernd Wittek, Tabetha A. Dobbins, and Ashtey T. Al-Hinai. Performance and Life" (funded by the Office of Naval Research).

POSTER PRESENTATIONS

First Place—Ashtey T. Al-Hinai, "Chemical Mechanical Polishing of Copper"; Second Place—Thomas J. Yuick Jr., "Optimization of Ni-Ti Shape Memory Alloy to Enhance Automotive Electrical Connectors" (further work sponsored by Ford Motor Company); Third Place—Bernd Wittek, "Surface Alloying and Dealloying in the System Cu-Au" (sponsored by the National Science Foundation).

Senior Receives Woodside Founder's Scholarship

Peter A. Kirkham, a senior in metals science and engineering, received the 1999 William Park Woodside Founder’s Scholarship, awarded through ASM International. A member of the University’s ASM International chapter, Kirkham notes that “Metals engineering...meets all of the criteria I have for a career: a challenging technical field, an established and dynamic industrial setting, expanding international business opportunities, and a broad range of job choices.”

The scholarship was established by Sue Woodside Shulee in honor of her grandmother, whose vision led to the founding of ASM International.

1999–2000 Scholarship Recipients

Many generous alumni have endowed scholarships in the Department of Materials Science and Engineering that provide support for our talented students. What follows is a list of awards made for the 1999–2000 academic year. The awards are mainly merit based. The availability of endowed scholarships aids the department’s recruiting efforts and helps reduce the financial burden students incur while at Penn State. To all those who have helped fund these scholarships, we are deeply grateful.

AVX/Kyocera Foundation Scholarship in Materials Science and Engineering

Levi Abrino, Stephen Chatfield, Mark Loigo, Michael Tristani, Nathan Werkhizer

C. Philip Cook, Jr. Memorial Scholarship in Ceramic Science and Engineering

Charles Battle, Obifeziene Ezekoye, Melvin Gottschalk, Daryl Kuban, Vorrada Loryouyong, Jamie Morley, Frances Nicholas, Craig J. Stringer

Richard P. and John N. Davis Scholarship in EMS

Christopher Long

Glass Container Industry Research Corporation Scholarship

Patrick Donahue, Tara M. Pecora

George Gleason Memorial Scholarship

Jeffrey Worznacz

Donald W. Hamer Scholarship in Electronic and Photonic Materials

Stephen Fulk, David MacMahon, Ryan Williams

Homel Scholarship in Ceramic Science and Engineering

Robert Cooley, Matt Hollenbeck, Norman B. Phelps

Floyd A. Hummel, Jr. Scholarship in Ceramic Science and Engineering

Jamie Morley, Jeffrey K. Murray

GM Scholar

Brianna Cooper, Obifeziene Ezekoye, Kevin Urman, Stefan Williams

Harvey P. Kocher Memorial Scholarship

Peter Imbrogno, Peter Kirkham, Ryan Wolf

Thomas M. and Eleanor W. Krebs Scholarship in Metallurgy

Carl Bruhaker, Kirstin Hemphill

Helen R. and Van B. Leichtliter Metallurgy Scholarship

Justin Greco, Melissa Marshall, Darren Verlato

Mr. and Mrs. Frank D. Lovett, Sr. Memorial Award

Ian W. Sercyumeur

Penn State Metallurgy Alumni Scholarship

David Crouch, Timothy DeHennis, Thomas Espgo, Tonya Faust, Joseph Kalp, Mitchell Rudman, David Whitcomb, Ryan Wolfe

Homel Scholarship in Ceramic Science and Engineering

Amy L. Kushner, Brent Miller

PPG Industries Minority Scholarship in Materials Science and Engineering

Varrada Loryouyong, Mathew R. Opitz

Anthony J. and Alberta L. Perrotta Scholarship in Materials Science and Engineering

Ryan Carr, David Comstock, Andrew Glendening

James and Mary Ellen Tietjen Scholarship in EMS

David Comstock, Evan Pickett

George H. and Madeleine Hager Todd Scholarship

David Berry, Brianna Cooper, Shawn Holberg, Dennis O’Leary, Matthew D. Smally, Ricki Stevenson, Ta Kwan Woo

William and Estelle Turney Scholarship in Ceramic Science and Engineering (new for 1999–2000)

Charles Battle, Lisa Friedman

Virginia S. and Philip L. Walker, Jr. Scholarship in Materials Science and Engineering

Jacob Brandspigel, David Comstock, Dana Del Toro, Thomas Pribicko

Sam Zerfoss Memorial Scholarship

Jody Cramp, Melvin Gottschalk, Matt Hollenbeck, Varrada Loryouyong, Jennifer Parker, Nicholas Smith, Kyle Zaranbo

Corporate representatives at the COOP presentations included, from left, Rick Ehleringer and Michael Schmidt of Cor Tech, and James Salzgiver of Allegheny Teleplane. COOP member firms enjoy privileges in the University’s materials labs.
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