

From the Department Head



Gary L. Messing, Head of Materials Science and Engineering

Friends and Colleagues,

We're in the midst of a new semester. I'm sure you recall how eager you used to be about beginning classes in January (brrrr and arrggghh). The renovation of Steidle is starting to make a difference; at least some people are telling us so. The new Undergraduate Lab is a beaut! We are now making plans for a new Undergraduate Materials Processing Lab. Renovating the space and equipping it will be a challenge.

With all the changes taking place, the faculty would like to invite you to an open house during the Arts Festival this summer to see how things are shaping up, and of course, to visit with friends. If you are interested in attending, send an email to Trish Koch at trish@matse.psu.edu. We'll have the Pantano Glass Blowing Shop open, too (see inside for story)!

Alums, we greatly appreciate your generous support of MatSE. We use these resources for scholarships, student travel, new MatSE displays, the creation of new undergraduate labs and a myriad of other things. We are making a concerted effort to attract more high quality young people to MatSE. Needless to say, increasing tuition and competition requires more resources for us to be successful. I've attached a form at the end of the newsletter, indicating some of our most pressing needs. I hope that more of you can participate in helping us remain one of the best MatSE departments in the country. I will be happy to visit with you if you want a comprehensive review of departmental activities.

Finally, should *MatSE News* go electronic? That means you will receive all news via the web site at <http://www.matse.psu.edu>. We have set up a voting site at <http://www.matse.psu.edu/vote.html>. Would you prefer to continue to receive the paper copy of *MatSE News* in the mail, or visit us online for an e-copy? Please vote and tell us what you think.

As always, feel free to drop in, we will be happy to show you around.

Gary

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Editor: Gary L. Messing
Writer/Editor: Trish Koch

Two MatSE Faculty Receive Distinguished Professor Title

Professors **Digby D. MacDonald** and **Gary L. Messing**, materials science and engineering, have been selected to receive the title of Distinguished Professor. The honor is given on the basis of an exceptional record of teaching, research, and service. Candidates for Distinguished Professor are nominated by their colleagues.



MacDonald, distinguished professor of materials science and engineering, is an expert in the areas of passive films and corrosion damage. Macdonald

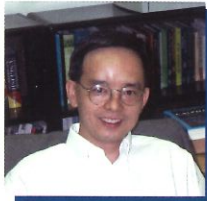
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Multi-Scale Modeling of Multicomponent Materials



Professor, Long-Qing Chen

Developing new materials and the capability of tailoring existing materials to meet new and demanding applications are critical for continued improvements in the quality of human life. As the traditional structure-properties-performance relationship approach to materials science and engineering shifts toward the design of materials with optimal functionality, advances in information technology and computational materials science will be a driving force in reducing the time and cost for the development of new materials.



Assistant Professor, Zi-Kui Liu

The inherent complexity of materials ranging from atomistic scale to macroscopic scale in a multicomponent environment can only be resolved through the integration of multi-scale modeling techniques, ranging from first-principles and atomistic calculations to macroscopic mechanical property simulations. In this integration, the fundamental databases interfacing two neighboring scales (Figure 1.) are the key feature of two research initiatives led by **Long-Qing Chen**, professor of materials science and engineering, and **Zi-Kui Liu**, assistant professor of materials science and engineering. Liu and Chen received a total of \$4.7 million for five years from the NASA Ultra Efficient Engine Technology program (UEET) and the National Science Foundation (NSF) Information Technology Research (ITR) program.

The NASA UEET project, led by Chen, focuses on the development of revolutionary materials technologies for future generation turbine engine propulsion systems. The ultimate goal is to predict the lifetime of Ni-based superalloy engine components. The computational models will be validated with critical experiments on the determination of thermodynamic data, high-temperature phase-equilibria, coarsening kinetics of γ' (gamma-prime) precipitates at high temperatures ($>1000^\circ\text{C}$) and high-temperature creep behavior of single-crystal Ni-based superalloys. All of the experimental validations will be carried out in close collaboration with the Advanced Metals Branch of the Materials Division at the NASA-Glenn Research Center and the General Electric Corporate Research & Development Center. Model development and validation will be performed on systems ranging from simple Ni-based binary alloys to complex alloys such as CMSX-10. The research team also includes partners from the University of Florida, Ford Motor Company and Universal Energy Systems.

Liu is heading up the NSF ITR project, which emphasizes the framework of a prototype grid-enabled software package for materials design, to predict the relationships among the chemical, microstructural and mechanical properties of multicomponent materials using the technologically important aluminum-based alloys as model materials. The software package will provide more efficient routes for database development and information exchange between materials design stages with new algorithms and parallel computing schemes. It will improve predictive power in multicomponent materials design, enabling scientists to develop new materials as well as tailor existing materials for better performance.

The NSF ITR project is a synergistic effort that leverages the overlapping and complementary expertise of the researchers in the areas of scalable parallel scientific computing, first-principles and atomistic calculations, computational thermodynamics, mesoscale microstructure evolution, and macroscopic mechanical property modeling. Other members of the research team include **Padma Raghavan**, associate professor of computer science and engineering (Penn State), **Qiang Du**, professor of mathematics (Penn State),

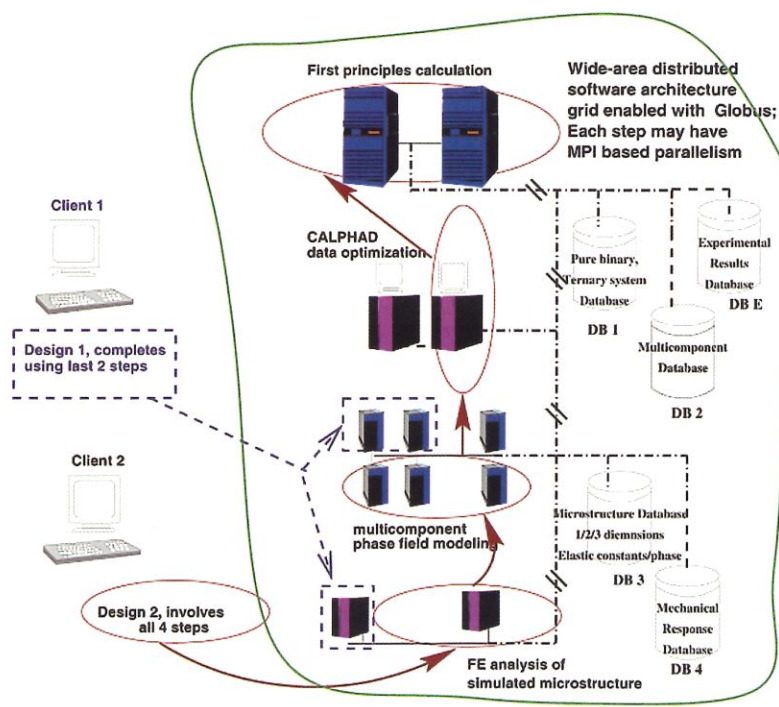


Figure 1: A schematic chart of software architecture for distributed multicomponent materials design

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Stephen Langer, physicist at the National Institute of Standards and Technology, **Christopher Wolverton**, senior technical specialist at Ford Research Laboratory, and **Dr. Ian Foster** at Argonne National Laboratory.

The research project will be integrated with the education and training of graduate students in the broad area of computational science and engineering through the participation of students and faculty in the High Performance Computing Graduate Minor offered through the Institute of High Performance Computing at The Pennsylvania State University.

Research Team Reports New Method of Manufacturing Thin Films of Superconducting Compound



Xiaoxing Xi

high Mg pressure



Joan Redwing

Recent articles in the *New York Times* and *Chemical and Engineering News* highlighted the research of Penn State faculty on superconducting MgB_2 thin films.

They reported in *Nature Materials* a new method, Hybrid Physical-Chemical Vapor Deposition, to deposit *in situ* epitaxial MgB_2 thin films. The technique was based on a thermodynamic calculation, which predicted that a high Mg vapor pressure is necessary for the phase stability of MgB_2 . The Penn State materials researchers combined high pressure process of chemical vapor deposition with the evaporation of Mg chips, successfully generating the high Mg pressure needed for the MgB_2 film growth. This method produces MgB_2 films with bulk-like properties, and it is more suitable for superconducting electronics than other currently available techniques.

The research team includes **Xiaoxing Xi**, associate professor of physics and materials science and engineering, **Joan Redwing**, assistant professor of materials science and engineering, **Qi Li**, associate professor of physics, **Darrell Schlom**, professor of materials science and engineering, **Zi-Kui Liu**, assistant professor of materials science and engineering and others from the University of Michigan.



Darrell Schlom



Zi-Kui Liu

Department Details

Pickering elected fellow of ASM International

Howard W. Pickering, distinguished professor of metallurgy, was elected Fellow of ASM International, an international society for materials engineers and scientists dedicated to advancing industry, technology and applications of metals and materials. Pickering was recognized for his pioneering research in the use of modern electrochemical and analytical techniques to the study of corrosion, corrosion prevention, and de-alloying.



(Continued from page 1)

received the Whitney Award from the National Association of Corrosion Engineers and the Wagner Award from the Electrochemical Society. He has written one book and has authored or coauthored more than 600 papers. He is also a member of the Royal Society of Canada.



Messing, distinguished professor of ceramic science and engineering and head of materials science and engineering, is recognized internationally for his work in ceramic processing and synthesis. He is president of the American Ceramic Society and was elected to the International Academy of Ceramics in 2000. Messing has published more than 200 papers and co-edited 12 books. He received the Wilson Research Award from the College of Earth and Mineral Sciences and the Richard M. Fulrath and Robert Sosman Awards of The American Ceramic Society. From

1997 to 2001, Messing served as director of the Materials Research Laboratory.

Department Details

Major Renovations to Deike and Steidle Buildings Approved

Major renovations of Steidle and Deike buildings have been approved and funded by the Provost as part of a Dean's Office plan to create a more student-centered College.

The objectives of the renovations are to (a) give EMS more of an "identity" especially for undergraduates, (b) make student services more visible and accessible, (c) enable recruiting, (d) bring modern classrooms for our majors into the departments, (e) make the EMS Museum more visible and functional, and (f) remove the many displays in the halls of Steidle so that **Materials Science and Engineering** can have an appearance that better matches its stature.

The floor plan for the ground floor of Deike includes (1) a substantially larger Student Center which includes more office space for recruiting, retention and advising, as well as a conference area to meet with prospective students and an enlarged student computing area; (2) substantial museum display areas with both the freshman seminar classroom and CAUSE classroom embedded in the museum (the museum will close two days a week to accommodate these classes) allowing for dual use of the space. The new Museum will work to represent all the disciplines in the College; and (3) EMS writing and math tutoring areas directly adjacent to the Student Center, creating more visibility for this important student service.

The **Department of Materials Science and Engineering** is currently creating a modern teaching laboratory above the Museum (this has received matching funds from the Provost and the Dean's Office). In addition, the Steidle Museum will now be renovated into an electronic classroom. The renovations are being planned for completion within 12 to 14 months.

James Runt named Associate Head for Graduate Studies



James P. Runt, professor of polymer science, was named Associate Head for Graduate Studies of Materials Science and Engineering on July 1, 2002. Runt, who served as chairman of the polymer science option of materials science and engineering from 1988-1994, replaced Prof. Long-Qing Chen in the position of associate head for graduate studies, who previously served in the position.

In this position, Runt is responsible for graduate student recruiting, administering graduate student admissions as well as graduate coursework.

Hall receives Staff Excellence and Outstanding Staff Awards



Materials Science and Engineering staff member, **Melanie Hall** was presented with the 2002 MatSE Staff Excellence Award at the MatSE and MRI Awards Banquet held at The Penn Stater Conference Center and Hotel on December 13, 2002. Hall also received the EMS Outstanding Staff Award, which was presented at the Dean's Staff Appreciation Luncheon on December 18, 2002 at the Nittany Lion Inn.

Hall, staff assistant in the department financial office, was nominated by MatSE faculty and staff and selected by the MatSE Professional Recognition Committee.

Comings and Goings...



Katina Bartley

Katina Bartley joined MatSE as a staff assistant in the graduate studies office. Katina came to us from the combined units of African and African American Studies, Labor Studies and Industrial Relations, and Women's Studies.

Kathy Gummo, former staff assistant in the graduate studies office accepted a position with the Materials Research Institute. **Cindy Rougeux**, who previously worked in the School of Languages and Literatures, filled the position of staff assistant in the graduate studies office.

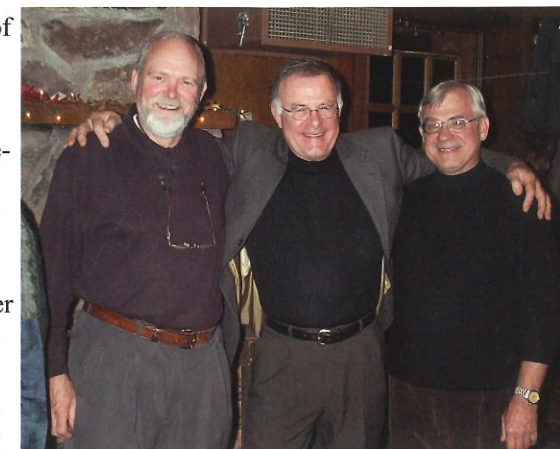


Cindy Rougeux

Department Details

Mike Coleman, Karl Spear and Richard Tressler Retire

After 89 years of combined service at Penn State, **Mike Coleman**, professor of polymer science, **Richard Tressler**, professor of materials science and engineering, and **Karl Spear**, professor of materials science and engineering, retired on June 30, 2002. MatSE faculty and staff honored them at a retirement party held on Wednesday, October 30, 2002 at The Stone Valley Lodge. Coleman, Spear and Tressler were each presented with a plaque displaying the names of students they advised and graduated during their years in the department.



Pictured from left to right: Emeritus Professors Mike Coleman, Karl Spear and Richard Tressler at their retirement party at Stone Valley

Michael M. Coleman, professor emeritus of polymer science, began his career at Penn State in September of 1975. Born in the United Kingdom (UK), Coleman attended various technical schools and began his career in science at a young age when he gained employment as a laboratory assistant at the age of 15. Later, he immigrated with his parents to Zambia, Africa where he worked on the copper mines as an assayer for seven years. Returning to the UK in the early 1960s, Coleman obtained his B.S. degree in Plastics Technology. Coleman returned to work for about a year before accepting a graduate student scholarship from Case Western Reserve University in Cleveland, OH where he obtained his Ph.D. in Macromolecular Science in 1973. He worked at DuPont's Experimental Station for two years, where he met his wife, before accepting a position of assistant professor of polymer science at Penn State. Coleman rose through the ranks and served as head of the polymer program from 1976-84 and department head of materials science and engineering from 1983-91. He has advised and graduated 30 graduate students. He has published over 200 peer-reviewed papers and co-authored three books, *The Theory of Vibrational Spectroscopy and its Application to Polymeric Materials* (1982); *Specific Interactions and the Miscibility of Polymer Blends* (1991) and *Fundamentals of Polymer Science* (1997). Coleman has been the recipient of both the EMS Wilson Outstanding Teaching Award (1983) and the Wilson Research Award (1991), and he is a Fellow of the American Physical Society.

Karl E. Spear, professor emeritus of materials science and engineering, received his B.S. degree in Mathematics at Baker University in 1961 and received his Ph.D. in Physical Chemistry from The University of Kansas in 1967. He also held an NSF Graduate Fellowship at the University of Münster, Germany. Spear worked as a staff scientist for Oak Ridge National Laboratory for three years before joining the faculty at Penn State in 1970, where he served as chair of the Ceramic Science and Engineering Program from 1986-91 and associate head of Penn State's Intercollege Graduate Program in Materials. He is author or co-author of over 180 publications and 3 patents in the area of high temperature materials chemistry.

Spear is currently President of The Electrochemical Society (ECS). His involvement in ECS has spanned more than 20 years. He has been a member of the executive committee of the High Temperature Materials Division for fourteen years, serving all of the officer positions. In 1995, he was named a Fellow of the Society and in 1997, received the ECS Solid State Science and Technology Award. Spear is also a Fellow of the American Ceramic Society, served as chair of its Phase Diagram Advisory Committee

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Shannon Zavacky, former staff assistant in the undergraduate studies office, accepted a promotion to Admissions Counselor in the Office of Enrollment Management. **Stacy Davidson** has filled the staff assistant position in the undergraduate studies office where she will focus on undergraduate recruiting and ABET. Stacy joined MatSE from the combined units of African and African American Studies, Labor Studies and Industrial Relations, and Women's Studies.



Stacy Davidson



Chris Muhlstein

Christopher Muhlstein from the University of California, Berkeley, joined the department as an assistant professor of materials science and engineering on September 1. His research interests include the fracture and fatigue of bulk and thin-film structural materials.

Department Details

(Continued from page 5)

and as President of its Ceramic Educational Council.

Richard E. Tressler, professor emeritus of materials science and engineering, earned his B.S. in 1963 from Penn State along with a commission in the U.S. Air Force. He earned his M.S. in 1964 from MIT, and his Ph.D. from Penn State in 1967. From 1967 to 1971 he served on active duty in the U.S. Air Force. After an NSF post-doc from 1971-72 at the University of Essex, England, he joined the faculty at Penn State where he served as Chairman of the Ceramic Science Program, Founding Director of the Center for Advanced Materials and Head of the Department of Materials Science and Engineering from 1991—2001.

The author or co-author of more than 210 publications, 12 patents and editor or co-editor of six books, his research has focused on durability of ceramics and composites in severe environments. Tressler was given the International Prize of the Japan Fine Ceramics Association (1998), elected Honorary Member of the Societe Francaise de Metallurgie et de Materiaux (1998), and elected to the Academy of Ceramics (1996).

A Fellow and Past President (1993-94) of the American Ceramic Society, he served as Chairman of the Basic Science Division (1985-86), on the Board of Trustees (1986-89), as Chairman of the Ceramic Educational Council (1983-84), and as Co-chair of the Centennial Celebration Committee (1995-99), among other roles. He was President of Keramos from 1986-88. Tressler received the Howard Lillie Memorial Award (1963), the Karl Schwartzwalde PACE Award (1982), and the Friedberg Lecturer (2001).



Student Scoop

MatSE Students Win Poster Competition at annual meeting of Pennsylvania Ceramics Association in September



Matthew Krohn, graduate assistant, won first prize for his poster, entitled, "Strength Modification of Enamelled Float Glass." His advisors are **John Hellmann**, associate professor of ceramic science and engineering and associate head for undergraduate studies, and **Carlo Pantano**, distinguished professor of materials science and engineering and director of the Materials Research Institute.



Richard Eitel, graduate assistant, won second prize for his poster entitled, "Investigation of Piezoelectric Properties of $(1-x)\text{BiScO}_3-x\text{PbTiO}_3$ with High T_c ." His faculty advisor is **Clive Randall**, professor of materials science and engineering and director of the Center for Dielectric Studies.



Kevin Fox, graduate assistant, won third prize for his poster entitled, "Advanced WC-Co Composites for Cutting Tool Applications." His advisor is **John Hellmann**.

Undergraduate, Mark Losego, Wins American Ceramic Society Scholarship Award



Mark Losego, undergraduate student in materials science and engineering, is the 2002 J. Earl Frazier Memorial Scholarship Award recipient of the Pittsburgh Section of the American Ceramic Society (ACerS). The Pittsburgh Section grants the award annually to a junior in an accredited ceramic science and/or ceramic engineering undergraduate curriculum. Losego received the award at the Bleininger Award Dinner of the Pittsburgh Section of ACerS in October.

Student Scoop

Three MatSE Graduate Students Receive 2003 Kennametal Award

MatSE graduate students, **Shenyang Hu, Wei Zhang and Yu Zhong**, received the 2003 Kennametal Award. The award provides funds for three graduate students who exhibit academic excellence.



Pictured from left to right: Dr. James P. Runt, Professor and Associate Head for Graduate Studies, Wei Zhang, Shenyang Hu and Yu Zhong.

The award was established as part of the strategic alliance between Kennametal and Penn State.

Other Student Awards...



Kok-Keong Lew, MatSE graduate student, was an award winner at the 43rd Electronic Materials Conference at the University of Notre Dame, Indiana for his paper, "Template Directed Vapor-Liquid-Solid Growth of Silicon Nanowires". Lew is advised by **Dr. Joan Redwing**, assistant professor of materials science and engineering.

Matthew Abrams, graduate assistant in the Department of Materials Science and Engineering, received first place in the graduate student poster contest at the Glass and Optical Materials Division meeting of the American Ceramics Society, which was held October 13-16 in Pittsburgh. **Dr. David J. Green**, professor of ceramic science and engineering, is his advisor.



Lisa Friedman Edge, former MatSE undergraduate student and Schreyer Honors Scholar, was selected as an EMS Student Marshal to represent the College of Earth and Mineral Sciences at the baccalaureate commencement ceremony on August 3, 2002. Her Faculty Marshal was **Dr. Susan Trolrier-McKinstry**, professor of ceramic science.

Penn State Chapter of ASM International receives Five Star Award

The **Penn State chapter of ASM International** received a Five Star Award in recognition of its outstanding achievement in the annual Chapter Quality and Recognition Program for the 2001-2002 chapter year. MatSE student officers for the chapter include: **Brian Marx**, graduate student; chair, **Andrew Glendening**, undergraduate student; vice chair and **Amy Stauffer**, graduate student; secretary.

MatSE Students Blow Glass for the Central Pennsylvania Festival of the Arts

MatSE's glass research group opened the doors to its lab for technical information about glass and free demonstrations on hot-glass blowing for the 2002 Central Pennsylvania Festival of the Arts. Several hundred Arts Fest patrons watched as students from **Dr. Carlo Pantano** and **Dr. John Hellmann's** research groups performed the demonstrations and provided hands-on opportunities for the public. The students focused on blowing artistic vases, bowls, and paperweights while augmenting their demonstrations with basic facts about glassworking and glass science. They also displayed posters explaining materials research at Penn State in the fields of ceramics, glasses, metals, and polymers. Many of the visitors commented that both the demos and information provided a nice link to the glass they viewed in the festival booths.



MatSE graduate assistant Amy Barnes talks about glass science to visitors during the Arts Festival.

Penn State student participants included Joe Ryan, Amy Barnes, Becky Kirkpatrick, Nevin Sherlock, Walter Lusher, Matt Krohn, Tim Yosenick, Peggy Hupin, and Elise Bickford.

Student Scoop

MatSE Undergraduate Scholarships Awarded for the 2002-03 Academic Year

AVX/Kyocera Foundation: Ju Pyo Hong, Craig McCann, Jaclyn Shearer, Trevor Spence, Jayson VanShura, Nathan Werkheiser, Kevin Yocca, Blaine Zern

Francis Hamilton Byers: Matt Benzio, Aaron Dawes, Daniel Frazier, Mark Haraczak, Lori Hoch, Rebecca Klossner, John McGrorey, Nathan Murphy, Arthur Nwankwo, Robert Smith

Charles G. & Donna H. Carson: Kurt Chiang

Michael & Mary Jane Coleman: Jessica Kohler

C. Philip Jr. Cook Memorial: David Comstock, Darin Fidurko, Thomas Pribicko, Shannon Rummel

Richard P. & John N. Davis: Jamie Morley

Dorothy Pate Enright: Amish Shah, Andrew Shindyapin

Glass Container Industry Res.: David Sinnk

George Gleason Memorial: Janet Lech

Donald W. Hamer: Sarah Dilts, Janet Lech, Mark Losego, Evan Pickett, Melissa Zimmerman

Hommell Scholarship: Jeffrey Bender

F. Hummel: Hideki Ogihara, Stephen Sollenberger

Thomas M. & Eleanor W. Krebs: John Zaharoff

Helen R. & Van H. Leichter: Robert O'Neill

Mr. & Mrs. Frank D. Lovett, Sr.: Jacqueline Sturgeon

PCA Scholarship: Anne Hibbard

Penn State Metallurgy Alumni: Jennie McGuire

Anthony & Alberta Perrotta: Stephen Benko, Erin Henry

Starsinic Scholarship: Sarah Mansueti

James & Mary-Ellen Tietjen: Michael Dankanich

George & Madeleine Todd: Andrew Glendening, Mary Horsey, Justin Hyska, Jeremy Rathfon

William & Estelle Turney: Brian Kim

Virginia S. & Philip L. Walker, Jr.: Jennifer Rygel

Sam Zerfoss Memorial: Jeffrey Bender, Ioanna Mina, Hideki Ogihara, David Sinnk, Stephen Sollenberger, Jacqueline Sturgeon



Some MatSE scholarship recipients pictured from left to right: (front) Jaclyn Shearer, Mary Horsey, Jackie Sturgeon, Lori Hoch, Sarah Dilts, Jess Kohler; (back) Ryan Carr, Sarah Mansueti, Mark Losego, David Comstock, Anne Hibbard



More MatSE scholarship recipients pictured from left to right: Jeremy Rathfon, Andrew Shindyapin, Matthew Benzio, Daniel Frazier, Stephen Banko

Congratulations Summer '02 Graduates!

WILLIAM R. CASTLE, B.S. (E P M)
KIRSTIN S. HEMPHILL, B.S. (METAL)
MICHAEL J. IRWIN, B.S. (PLMSE)
DONALD T. MANHEIM, B.S. (CERSE)

KRISTEN H. BROSNAN, M.S.
CARL O. BRUBAKER, M.S.
LISA F. EDGE, B.S. (CERSE) and M.S.

MATTHEW D. GARRATT, M.S.
WILLIAM GOLUMBFSKIE, M.S.
KATHERINE N. OATES, M.S.
TARA Y. PLEW, M.S.
STEVEN J. VANCE, M.S.

FAISAL M. AL-FAQEER, Ph.D.
ROBERT A. KIMEL, Ph.D.
XI ZENG, Ph.D.



Congratulations Fall '02 Graduates!

DAVID C. BERRY, B.S. (METAL)
OBIEFUNE K. EZEKOYE, B.S. (CERSE)
MARY A. HORSEY, B.S. (METAL)
ROGER L. ICE, B.S. (METAL)
JOHN R. MC GROREY, B.S. (E P M)

SUMEET BHALLA, M.S.
ADITYA BHANDARI, M.S.
KENT HUTCHINGS, M.S.
WEI-EN LIU, M.S.
SIRILAK MENAKANIT, M.S.
PREUCHSUDA SUPHANTHARIDA, M.S.
RYAN THAYER, M.S.

ASHRAF AL-HINAI, Ph.D.
QINGYUAN LIU, Ph.D.
WEI PAN, Ph.D.
KAI WANG, Ph.D.
TAE WON, Ph.D.
XIANXIAN WU, Ph.D.
HUSEYIN YILMAZ, Ph.D.
MARK ZURBUCHEN, Ph.D.

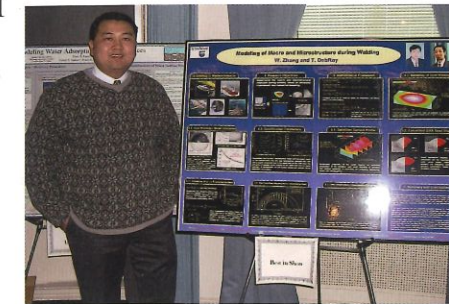
Student Scoop

MatSE holds first annual graduate student poster competition

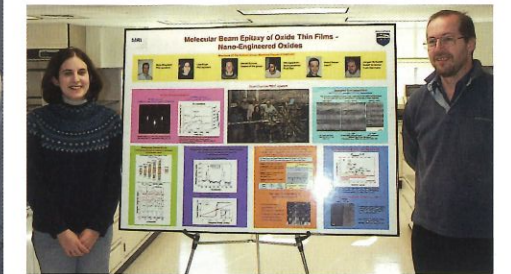
In December 2002, MatSE held its first annual graduate poster competition. Graduate students and post-docs with a faculty advisor in MatSE were invited to submit a poster displaying their research. Posters will be displayed throughout Steidle, MRI and MRL buildings. Winners of the contest were announced at an end-of-semester, student holiday party and awarded a monetary prize. Award-winning posters are on display in the main corridor on the first floor of Steidle building. The following is a list of the winners:

Best In Show Wei Zhang

Tarasankar DebRoy - Advisor
"Modeling of Macro and Microstructure during Welding"

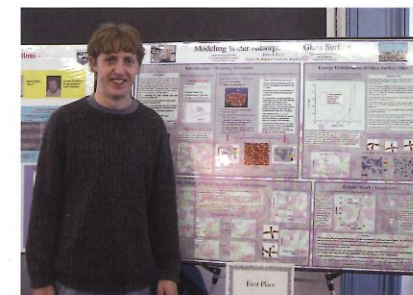


First Place - Group Category
Mike Biegalski, Lisa Edge (pictured), Venugopalan Vaithyanathan, Kevin Heller, Jurgen Schubert (pictured)
Darrell Schlom - Advisor
"Molecular Beam Epitaxy of Oxide Thin Films - Nano-Engineered Oxides"



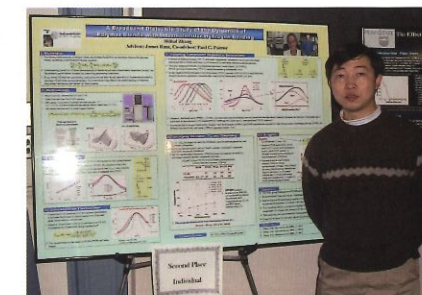
First Place - Individual Category Elam Leed

Carlo Pantano - Advisor
Victor Bakaev - co-advisor
"Modeling Water Adsorption on Glass Surfaces"



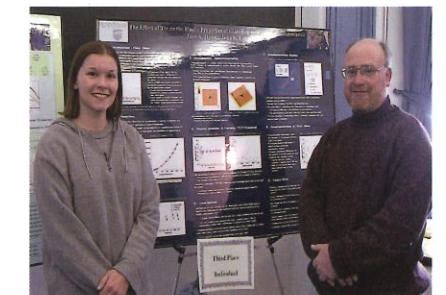
Second Place - Individual Category Shihai Zhang

James Runt - Advisor
Paul Painter - co-advisor
"A Broadband Dielectric Study of the Dynamics of Polymer Blends with Intermolecular Hydrogen Bonding"



Third Place - Individual Category Jane Howell

John Hellmann - Advisor
"The Effect of Tin on the Elastic Properties of Glass Evaluated Using Nanoindentation"



Alumni Annals

New MatSE Endowments (since July 2002)

The Ruth Ann Dudenhoefer Ceramics Scholarship

Andrew Gregory Slachta Scholarship

Gary L. and Rebecca L. Messing Fund for Academic Enrichment in Materials Science and Engineering

Donation to New MatSE Undergraduate Lab



Pictured with tape caster from left to right: Eric Twiname, Gary Messing and Richard Mistler.

Richard Mistler and Eric Twiname ('00g MatSE) of Richard E. Mistler, Inc. donated a tape caster to the department for use in the new MatSE undergraduate laboratory that was developed this year. Thank you to Dick and Eric!

Jeffrey H. Haeni receives Congressional Fellowship



Jeffrey H. Haeni, Ph.D., recent graduate of materials science and engineering, has been named the 2002-2003 Optical Society of America and the Materials Research Society (OSA/MRS) Congressional Science and Engineering Fellow. As a recipient of this one-year appointment, sponsored jointly by OSA and MRS, Haeni is working on Capitol Hill in the office of Rep. Rush Holt (D-N.J.) as a special legislative aid on scientific and technical matters.

“I believe it is important for scientists to take an active role in the legislative process,” Haeni said. “A quick glance at the major issues currently facing our nation—stem cell research, energy policy, anthrax, global warming, missile defense, and the economic downturn—reveals that the scientific community will not only be directly affected by legislative action on all of these matters, but will be instrumental in finding appropriate solutions.”

Haeni’s work involves drafting and building support for legislation. Specifically, he is working on introducing a bill to reestablish the Office of Technology Assessment, a Congressional agency that was abolished in 1995, which provided science and technology advice to Congress, and support for non-defense science research and development funding. He is also working on a renewable energy policy, covering topics from fusion research to tax incentives for hybrid vehicles. Haeni said, “Promotion of renewable energy sources are vital to reduce our dependence on foreign oil and to help reduce green house gas emissions.”

Haeni received his Ph.D. in materials science and engineering from Penn State in August 2002. His research focused on the investigation and growth of high-κ epitaxial gate dielectrics and other perovskite materials on silicon. He has published three lead-author articles in refereed journals while working under the supervision of his advisor, **Darrell Schlom**, professor of materials science and engineering.

Reflecting on his graduate studies at Penn State, Haeni credits the work of his advisor for the ability to improve his speaking and writing skills, which he uses constantly as a congressional fellow. He says of Schlom, “Darrell made every effort to send me to many professional conferences to present my work during my time at Penn State. Often, I would be one of only a handful of students at these conferences, indicating that Darrell's approach was not common to other advisors.”

Along with his research at Penn State, Haeni has also conducted research at the University of Augsburg in Germany and participated in a Habitat for Humanity project in New Zealand, where he assisted the Ngaitai Maori tribe in building homes. “I gained valuable exposure to a different model of university education, alternative programs for social welfare, and a view of the influence that American domestic and international policies have on other countries,” Haeni said.

When asked about his future plans, Haeni says he is still not sure. “I think I would like to stay in science policy for at least a bit longer.” Currently I am applying for a position in the State Department and the Agency for International Development. “Long term goals may include returning to academia,” he says.

First reported in MRS Bulletin, December 2002.

Thank you to all who contributed to MatSE! (from July 1, 2002—January 23, 2003)

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American Physical Society Meeting, Austin, TX	March 3-7
American Chemical Society Meeting, New Orleans, LA	March 23-27
GEMS Spring Board Meeting, University Park	March 27-29
2003 GEMS Seminar Series, Nittany Lion Inn Ballroom, University Park, PA	March 27, 1-5pm
EMEX	March 29
IPAC, MatSE Student Awards Banquet	April 11
Grand Destiny Campaign Closing Celebration, University Park, PA	April 25-26
American Ceramic Society Meeting, Nashville, TN	April 27-30
GEMS Commencement Reception, Alumni Hall, University Park, PA	May 16
Traditional Reunion Luncheon, Nittany Lion Inn, University Park, PA	May 30
GEMS Arts Festival Breakfast	July 12
MatSE Alumni Open House	July 12
Taylor Memorial Lectures in Materials	September 18-20

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