The Anvil
Metallurgical and Materials Engineering Newsletter
Spring 2013
It is with great pleasure that I present to you on behalf of UA’s department of metallurgical and materials engineering the second issue of The Anvil! We appreciate the very positive feedback we have received from our alumni regarding our newsletter. In the inaugural issue of The Anvil, I informed you that the foundry wing of H.M. Comer Hall was demolished in preparation for the construction of the fourth and final phase of the science and engineering quad and that we were preparing to break ground for our new foundry. I am pleased to inform you that our new foundry has been completed! A full update of the foundry, including photos, is provided on page 15. We are planning an open house for the new foundry in conjunction with our second MTE alumni reunion to be held the weekend of the 2013 A-Day game. We hope that you will be able to join us.

As The University of Alabama continues to grow, so does the department. Our Fall Semester 2012 undergraduate enrollment is 71, which is a record! Of these 71 students, 23 are first-time freshmen and community-college transfers. This is an increase in enrollment of about 48 percent compared to Fall Semester 2011, which is the highest percentage increase in the College of Engineering! Our graduate enrollment is 40, which is an increase of about 67 percent compared to Fall Semester 2011. We have a total of 111 students in the MTE department, which is very exciting. We are looking forward to continue growing our program, and I extend a heartfelt thanks to our faculty, students, staff and Industrial Advisory Board who have all played a significant role in our recruiting efforts.

We hope that you enjoy reading our newsletter, and we continue to encourage your feedback. We look forward to hearing from you and … Roll Tide!

Viola L. Acoff, PhD
Department Head
THE UNIVERSITY OF ALABAMA

THANKS TO OUR MTE INDUSTRIAL ADVISORY BOARD

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BOEING SUPPORTS MTE DEPARTMENT

Sheila Sharp, BS ’96, presents the Boeing Co.’s financial support to Dr. Chuck Karr, dean of the College of Engineering. These funds support scholarships and related academic needs for students in the department and the College. Thank you!

THE MTE DEPARTMENT

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THE 2011 AWARD WINNERS

Dr. Thomas Scharf, center, receives a plaque in recognition for contributions to the field of metallurgical and materials engineering and the promotion of The University of Alabama MTE program. On either side of Scharf are, from left, Drs. Garry Warren and Voia Acoff.

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MTE DEPARTMENT NEWS

WARREN ENDS SUCCESSFUL TERM AS TMS PRESIDENT

At the 2011 annual meeting for The Minerals, Metals and Materials Society, or TMS, Dr. Garry Warren began his one-year term as TMS president. The position involves a three-year commitment of one year each as vice president, president and past president. TMS is an international organization that comprises more than 12,000 members from more than 100 countries. Its mission is to promote the global science and engineering professions concerned with minerals, metals and materials.

Q: What do you feel is TMS’s greatest accomplishment during your year as president?
A: 2011 was, really, a very exciting time for the metallurgy and materials community, a year in which various government agencies began an endeavor called the MGI, the Materials Genome Initiative. This endeavor called the MGI, the Materials Genome Initiative. This endeavor began an international community around the concept of revolutionizing the development of new materials, bringing them to market in half the usual time and yielding significant simultaneous cost savings. Essentially this means that, not all, but many experiments can be performed virtually. This concept builds upon the most fundamental tools of our profession — structure, properties, processing and performance relationships — to predict the behavior of materials using the power of integrated computational materials engineering, or ICME. I can truly say that this was the first time in my 42 years as a metallurgist and professor that I have heard people at the highest levels of government express the opinion that what we do is critical for making innovative and groundbreaking technological advances. I had the good fortune to assist TMS in organizing the scientific community around the concept of the MGI. TMS took a lead role in obtaining the endorsement of the principal goals of the MGI from 11 different professional societies representing over 670,000 scientists and engineers. This endorsement was provided in a letter sent to President Obama last year.

Q: What do you feel is your greatest accomplishment during time on the TMS board of directors?
A: Getting a start on the MGI was significant, but that effort only required me to jump on board, so that was pretty easy. On the other hand, one area where I did play a more personal role was in revitalizing the TMS Foundation. You may not even know that TMS has a foundation, but we do and it supports TMS scholarships and many other worthwhile causes. I felt the Foundation was underfunded and small, at about $2 million, compared with other organizations of similar size to TMS. I felt TMS was capable of growing the foundation to a much larger size, perhaps even $10 million to $12 million. During the past 18 months TMS has employed a consultant who is helping to initiate a fundraising campaign to help us accomplish that growth. The consultant tells us we have excellent prospects for achieving that level of growth in our foundation.

Q: What is the future direction of materials research and engineering?
A: I believe that ICME, integrated computational materials engineering, will one day become a principal tool that every metallurgist will have at their disposal to optimize materials, manufacturing processes and component design long before fabrication begins.

MERGING THEORY AND EXPERIMENTS FOR THE MATERIALS GENOME INITIATIVE

Dr. Su Gupta, of MTE, is part of a multidisciplinary UA team composed of lead investigator Dr. Bill Butler and physics colleagues Dr. Patrick LeClair and Dr. Dipanjana Mazumdar in developing a new class of half-metallic Heusler alloys that so far is yielding significant simultaneous cost savings. Essentially this means that, not all, but many experiments can be performed virtually. This concept builds upon the most fundamental tools of our profession — structure, properties, processing and performance relationships — to predict the behavior of materials using the power of integrated computational materials engineering, or ICME. I can truly say that this was the first time in my 42 years as a metallurgist and professor that I have heard people at the highest levels of government express the opinion that what we do is critical for making innovative and groundbreaking technological advances. I had the good fortune to assist TMS in organizing the scientific community around the concept of the MGI. TMS took a lead role in obtaining the endorsement of the principal goals of the MGI from 11 different professional societies representing over 670,000 scientists and engineers. This endorsement was provided in a letter sent to President Obama last year.

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SUZUKI LEADS INTERNATIONAL, MULTIUNIVERSITY EFFORT FOR NEW PERMANENT MAGNETS

Today, several high-tech gadgets, including computers and mobile phones, depend on small amounts of metals to achieve the properties necessary to function in their particular application. The strongest magnets available are the materials using rare-earth elements such as neodymium and dysprosium in addition to iron, represented by NdFeB. Because of a limited amount of these rare-earth materials, as well as the United States’ dependency on exports from China for these materials, a concentrated effort is underway to achieve the same, if not improved, magnetic properties that do not need rare-earth-metal additions. Dr. Takao Suzuki, MTE professor and director of the Center for Materials for Information Technology, is leading a collaborative, international effort funded by the G8 Research Council’s Initiative on Multilateral Research. The project is to develop thin-films and particles for strong magnets without using rare-earth elements for green energy. The project specifically focuses on manganese alloy systems that are naturally abundant in the earth. The international team includes Dr. Gregory Thompson, of MTE, is of this behavior and means to develop a fundamental understanding of this behavior and means to improve the erosion characteristics of materials and the optimization of plasmas. This program aims to improve a broad range of areas including performing satellite thrusters, improved tubes for the U.S. Department of Defense radar and communication systems, more efficient high-intensity lamps and new plasma deposition and spray-coating processes.

UA MINT FACILITY AND NEWS • RESEARCH

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Q: What do you feel is TMS’s greatest accomplishment during your year as president?
A: 2011 was, really, a very exciting time for the metallurgy and materials community, a year in which various government agencies began an endeavor called the MGI, the Materials Genome Initiative. This analogy of materials to biology is an interesting one. Just as biologists can imagine assembling particular DNA sequences to produce a new drug or type of tissue, materials engineers can similarly imagine assembling molecules, grains or crystal structures into a new microelectronic device or new turbine blades for jet engines. In a nutshell, this effort has the potential to revolutionize the development of new materials, bringing them to market in half the usual time and yielding significant simultaneous cost savings. Essentially this means that, not all, but many experiments can be performed virtually. This concept builds upon the most fundamental tools of our profession — structure, properties, processing and performance relationships — to predict the behavior of materials using the power of integrated computational materials engineering, or ICME. I can truly say that this was the first time in my 42 years as a metallurgist and professor that I have heard people at the highest levels of government express the opinion that what we do is critical for making innovative and groundbreaking technological advances. I had the good fortune to assist TMS in organizing the scientific community around the concept of the MGI. TMS took a lead role in obtaining the endorsement of the principal goals of the MGI from 11 different professional societies representing over 670,000 scientists and engineers. This endorsement was provided in a letter sent to President Obama last year.

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UA, GEORGIA TECH JOIN TO STUDY MATERIALS IN PLASMAS

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The 53rd International Field Emission Symposium, one of the longest consecutive meetings in microscopy, was held at UA May 21-25, 2012. IFES is the premiere meeting in high-field nanosciences and atom-probe tomography. The local organizing committee consisted of Dr. Gregory Thompson, chair, and Dr. Mark Weaver, both of MTE, along with Richard Martens, manager of the Central Analytical Facility. The meeting had 110 technical presentations given as plenary presentations, invited talks and contributed talks. More than 70 posters were presented during two evening sessions. The conference attracted 182 participants from 15 countries, including Australia, Belgium, Germany, India, Jordan and Japan. The meeting began with a pre-meeting tutorial session and opening reception at the University Club. A conference excursion to NASA’s Space and Rocket Museum in Huntsville, Ala., and a closing banquet in the Denny Center under the Saturn V rocket left the attendees with a memorable experience. For more information, visit www.ifes2012.ua.edu.

The MTE department, was recognized as the recipient of the 2012 Alexander R. Scott Distinguished Service Award from TMS, the professional organization encompassing the entire range of materials science and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials. Reddy received the award at the 141st TMS annual meeting and exhibition in Orlando, Fla., in March 2012. The Alexander R. Scott Distinguished Service Award recognizes a member’s outstanding contribution to TMS. The citation for the award reads, “For decades of enthusiastic service at all levels and for implementation of society-level strategic planning processes.” Reddy’s teaching and research experiences are in the field of chemical and materials engineering, particularly in the areas of thermodynamics, materials synthesis, molten-metal processing and renewable energy. He has published more than 350 papers and 24 books, including an undergraduate textbook on thermodynamics, and mentored more than 50 graduate students and 34 postdoctoral and research associates.

NANOTECHNOLOGY OUTREACH TO HIGH SCHOOL STUDENTS

Drs. Nitin Chopra and Su Gupta, of MTE, teamed up with Drs. Martin Bakker and Laura Busenlehner, of chemistry, to provide a learn-and-do workshop in nanotechnology. The major goal of the American Chemistry Society high school nanotechnology workshop was to introduce students from Tuscaloosa schools to the emerging nanoscale science. The event was held April 23-26, 2012. Sixteen students were selected from Northridge High School and divided into four groups. Each group was allowed to do and observe a nanoscale experiment before they were exposed to nanoscale characterization techniques for evaluating the results of their experiments. The workshop was sponsored by the local ACS chapter through the Innovative Project Grant and the Center for Materials for Information Technology.

ACOFF RECOGNIZED AS AN ENGINEER MAKING A DIFFERENCE

In 2011, Dr. Viola L. Acff, head of the MTE department, was recognized by her alma mater, The University of Alabama at Birmingham, during the 40th anniversary dinner for the School of Engineering. She was one of 40 former engineering graduates of UAB who received the distinction of making a difference for their contributions to the engineering discipline. During her career, Acff has published more than 80 refereed papers and received more than $7 million in research grants.

REDDY RECEIVES ACOCCADES FOR PROFESSIONAL SERVICE

Dr. Ramana Reddy, ACIPCO Professor of Metallurgical and Materials Engineering at The University of Alabama, was named the recipient of the 2012 Alexander R. Scott Distinguished Service Award from TMS, the professional organization encompassing the entire range of materials science and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials. Reddy received the award at the 141st TMS annual meeting and exhibition in Orlando, Fla., in March 2012. The Alexander R. Scott Distinguished Service Award recognizes a member’s outstanding contribution to TMS. The citation for the award reads, “For decades of enthusiastic service at all levels and for implementation of society-level strategic planning processes.” Reddy’s teaching and research experiences are in the field of chemical and materials engineering, particularly in the areas of thermodynamics, materials synthesis, molten-metal processing and renewable energy. He has published more than 350 papers and 24 books, including an undergraduate textbook on thermodynamics, and mentored more than 50 graduate students and 34 postdoctoral and research associates.

HOMETOWN HERO

Dr. Gregory Thompson was recognized as a “Crimson Tide Hometown Hero” at The University of Alabama homecoming football game against Mississippi State University on Oct. 27, 2012. TIAA-CREF, one of the retirement investment groups at UA, honors one faculty member from each of UA’s colleges for service and dedication to the Tuscaloosa community beyond their normal university responsibilities. Thompson was a multidepartment nomination within the College of Engineering for his involvement in organizing relief efforts following the April 27, 2011, tornado outbreak.

NEW TO MTE

SONG JOINS FACULTY

Dr. Jinhui Song joined the department of metallurgical and materials engineering in August 2011 as an assistant professor. Song received a bachelor’s degree in 1998 from the School of Physics, Nanoki University in China, a master’s degree in physics in 2003 from the Georgia Institute of Technology, and a doctorate in physics at Georgia Tech. He carried out his postdoctoral fellowship in the same group from 2008 to 2011. He and his doctoral adviser co-invented the nanogenerator and ultrasonic wave-driven nanogenerator published in Science. Song has received a number of awards, including the KAUST Global Research Partnership Research Fellowship, the 2007 MRS Graduate Student Silver Award, the 2006 School of Materials Science and Engineering Research Initiation Award and the 2005 School of Materials Science and Engineering Advanced Publication Award and Research Initiation Award. He is the author or co-author of more than 30 journal articles and three U.S. patents. As of February 2012, his total citations of his co-authored papers are more than 3,300 with an h-index of 22. Song is developing a research program on the synthesis and the characterization of nanostructured materials and relating that to mechanical, electrical and piezoelectrical properties. His research aims at developing materials for a range of energy and nanosensor-based applications and devices.

MTE WELCOMES KIM WALKER

Kim Walker was hired as an administrative secretary in 2011. She earned a bachelor’s degree in business management and human resources. Kim and her husband, Kevin, moved from Montgomery, Ala., to a faculty member for UA Libraries. Kim’s hobbies include running, crocheting and volunteering for events such as the Sidewalk Film Festival and Quidditch on the Quad. She is always eager to help faculty, students and other staff. The MTE department is happy and proud to welcome her aboard.
FACES IN THE CROWD

MTE Graduate Student Profile
Name: Todd Butler
Research adviser: Dr. Mark Weaver

Q: What attracted you to UA for graduate studies in MTE?
A: I was excited about the opportunity to use state-of-the-art instrumentation in my research. This allows me to achieve significant impact in research as well as develop skills that will make me marketable upon graduating.

Q: What is your research topic?
A: I am working on shape-memory alloys and means to tune their transformation temperatures. In particular, I am working on the Ni-Ti-Al alloys.

Q: What has been your greatest achievement or experience during your time in MTE?
A: My undergraduate degree was physics. I am proud of how I have been able to transition and do well in the metallurgical and materials graduate program. Also, I have been an Alabama fan and loved the campus. It was a perfect fit for me. I learned that materials were used in all types of engineering fields, I wanted to be part of such a degree. It would be diverse and offer a range of different job prospects when I graduated.

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MTE Undergraduate Student Profile
Name: Chase Smith
Hometown: Citronelle, Ala.

Q: How do you plan to use the knowledge and experiences gained at UA in your future career?
A: I am looking forward to gaining an industrial research position. My education at UA will give me the skills I need to conduct research, write technical reports and be qualified in using a variety of tools to analyze materials.

Q: What attracted you to UA and specifically MTE?
A: I am working on shape-memory alloys and means to tune their transformation temperatures. In particular, I am working on the Ni-Ti-Al alloys.

Q: Have you been involved in any student organizations while at UA? If so, which ones?
A: I have been involved in several honor and volunteer organizations. One of my favorites is Sigma Alpha Lambda, which is a leadership organization that has gotten me involved in Relay for Life and raising donations to the West Alabama Food Bank.

AERIEL MURPHY RECEIVES RECOGNITION FOR ACADEMIC ACHIEVEMENTS

Aeriel Murphy, BS ’12, was awarded the 2012 William and Mary Dyrkacz Scholarship from ASM International. This scholarship provides $6,000 toward educational expenses for one academic year and recognizes an outstanding undergraduate student at the junior or senior level who demonstrates exemplary academic and personal achievements, interest and potential in metallurgy or materials science and engineering. In addition, $500 is given to help recipients attend the Materials Science and Technology Conference. The scholarship was established in 2011 by Mr. and Mrs. William Dyrkacz as an expression of their commitment to education and the materials science and engineering community.

Murphy received the 2012 Randall Outstanding Undergraduate Research Award, one of the top undergraduate research awards given to undergraduates at UA. This was for research she performed under the guidance of Dr. Su Gupta.

She also presented research at the TMS 2012 annual meeting in Orlando, Fla. Her poster titled “Mechanical Behavior of Cast MgAZ31-B Alloy Produced by Magnetic Suspension Melting Processing” was awarded first place. She has received a $4,000 scholarship and complimentary registration to the TMS 2013 Annual meeting in San Antonio, Texas, courtesy of the Light Metals Division. This research was mentored by Drs. Nagy El-Kaddah and Mark Weaver.

BLAKE WHITLEY RECEIVES HIGHEST HONOR FROM COE
Blake Whitley, BS ’12, received the 2012 Capstone Engineering Society Outstanding Senior Award. Along with this award, Whitley received a $500 cash stipend and a plaque to honor his achievements. Whitley maintained a perfect GPA throughout his college career. The Capstone Engineering Society, the alumni association for the College of Engineering, established the Outstanding Senior Award in 1986 to honor an exceptional student who deserves distinction among his or her peers. An outstanding student is selected from each department in the College, and the overall winner is determined by a selection committee after assessing each student’s academic performance, professional and technical activities, College leadership, external leadership and other activities. Whitley was also recently honored with the 2012 Copper Alloy Division Scholarship by the American Foundry Society, receiving a $1,000 award. He also had an award-winning student-technology paper in the International Journal of Metalcasting. Dr. Laurentiu Nastac advised him in this research.
AL HUNTER SCHOLARSHIP GOES TO BRETT HUNTER

Junior Brett Hunter is the 2012 recipient of the Al Hunter Scholarship. This scholarship was established to honor Al Hunter who was the “inventor of the matchplate molding machine and ... mold handling line innovations.” Brett Hunter received the award at the College Industry Conference meeting in Chicago in November 2012.

UA STUDENTS WIN AGAIN IN CASTING COMPETITION

For the second year in a row, a team of University of Alabama engineering students won the Student Casting Competition for the Southeast organized by the American Foundry Society. They received $500 for their hard work. UA’s team consisted of undergraduates Blake Whitley, Alex Blackwell, BS ’12 and Brett Hunter, BS ’12, and graduate students Ash Patel, Kxdida Liu and Shian Jia. They designed and casted a helmet for soldiers using 3-D computer modeling and printing technologies for the mold design. During their first pour, in the advanced ultrasonic processing facility available at the UA solidification laboratory, they achieved a defect-free helmet that impressed the AFS judges. The helmet was made from an aluminum alloy reinforced with aluminum-nanoparticles that allowed the helmet to double its strength while keeping the weight the same at 1.4 pounds. This work bridges new trends in metal casting with nanotechnology. The students were supervised by Dr. Laurentiu Nastac.

HONORS DAY RECIPIENTS

On April 2, 2012, the MTE department held its annual awards banquet to recognize and appreciate the hard work of our students. Recipients are listed below.

Departmental Awards

Caleb Felker: E.C. Wright Outstanding Freshman Award
John Callhoun: E.C. Wright Outstanding Sophomore Award
Kristin Tippie: E.C. Wright Award for Excellence
Clayton O’Brien: John P. Duke Outstanding Senior Award
Robert Wright: C.H.T. Wilkins Award for Excellence
Alex Blackwell: Farabee-Tannehill Award for Excellence
Suzanne Kornegay: Materials Advantage (MS&T) Student Chapter Award
Brett Hunter: Metallurgical and Materials Engineering Outstanding Junior Award
Ariel Murphy: Metallurgical and Materials Engineering Outstanding Senior Award
Blake Whitley: Alpha Sigma Mu Outstanding Undergraduate Student Award
Nicholas De Leon: Certificate of Appreciation for Above and Beyond Department Service
Chad Hornbuckle: Certificate of Appreciation for Above and Beyond Department Service

Citation Corporations Endowed Scholarship Recipients

Elizabeth Bix
Rebekah Gage
Jason Hebert
Kristin Tippie
Brett Hunter
Blake Whitley
Samuel Schwarm
Robert Wright

JASON HEBERT HONORED FOR ACHIEVEMENTS IN METALLURGY

Senior Jason Hebert was recognized as the 2012 George A. Roberts Scholarship given by the ASM Materials Education Foundation. This scholarship provides $6,000 toward educational expenses for one academic year. It is awarded to an outstanding undergraduate student at the junior or senior level who demonstrates exemplary academic and personal achievements, interest and potential in metallurgy or materials science and engineering. The scholarship was established in 1995 by ASM past president Dr. George A. Roberts to help further the education of students serving as role models in the field. Herbert also won a $1,000 AFS Birmingham College Scholarship in 2012. The scholarship was established by ACIPCO.

CONGRATULATIONS TO JEREMY PAYNE

Junior Jeremy Payne was selected as one of the AIST Ferrous Metallurgy Education Today, or FeMet, Scholarship recipients for 2012–13. This scholarship includes $10,000 paid over two academic semesters and a paid summer internship in a North American steel mill. The FeMet Scholarship was established by the Association for Iron and Steel Technology Foundation to increase the number of students studying metallurgy and materials science in North America and to increase the number of such students electing to pursue careers in the iron and steel industry upon graduation.

MTE VIDEOS EARN TOP HONORS

The Association for Iron and Steel Technology selected two videos by Blake Whitley and Miller Wright, BS ’12, as first and second place, respectively, in “The Real Steel” Marketing Video Challenge sponsored by the AIST Foundation. The cash awards brought in $7,500 to the MTE student chapter. The public voted on the submissions for the content of overall quality, environmental consciousness, technological advancements, safety awareness and attracting young people to the steel industry. The first-place team video was titled “Steel: Shaping Our World” and the second-place team video was titled “Picturing Steel.” The videos can be at http://www.youtube.com/user/AISTvideo.

STUDENT RESEARCH HONORS

Nick De Leon presented a poster titled “Elevated Temperature Deformation in Ta,C” at the Ultra-High Temperature Ceramics: Materials for Extreme Environment Applications II Conference in Herstein, Austria, in May 2012. He received second-place recognition for graduate research. He is mentored by Dr. Gregory Thompson.

Derrick Stokes, a doctoral student in materials science, was awarded third place in the poster competition at the Alabama Louis Stokes Alliance for Minority Participation, or LSAMP, Spring Research Conference held at Auburn University April 2012. He competed against students from the 12 different institutions that make up the Alabama LSAMP Alliance. Stokes is advised by Dr. Viola Acoff.

Hao Su, doctoral graduate student, won the third prize for best student paper from Nanomaterials and Energy Symposium at the TMS annual meeting in Orlando, Fla., in 2012. His poster was titled “Optimization of CoPt-AlN Granular Media for High Density Applications.” Hao Su is supervised by Dr. Su Gupta.

Chad Hornbuckle, doctoral candidate, won the best poster award for the Intermetallic-based Alloys-Science, Technology and Applications Symposium at the Materials Research Society I meeting held November 2012 in Boston, Mass. His poster, “Structure and Shape Memory Properties of a Nanoscale Precipitation Ni-rich Ni-29.7Ti-20Hf (at.%),” was co-authored with Dr. Taisuke T. Sasaki, Mr. Glen Bigelow, Dr. Ron Noebe, Dr. Mark Weaver and his adviser Dr. Gregory Thompson. The work is a collaboration between UA and the NASA Glenn Research Center. The award included a $400 cash prize along with an invitation to the symposium banquet.

Justin Brons, doctoral candidate was the recipient of the Microscopy Society of America’s Presidential Graduate Student Award for his paper “Orientation Dependent Field Evaporation Behavior in Multilayer Thin Films.” He received this recognition at the Microscopy and Microanalysis meeting held in Nashville, Tenn., in August 2011. Brons is mentored by Dr. Gregory Thompson.

Larry Summerville, senior, won first place recognition for his research poster “Morphological Evolution and Surface Migration of Gold Films” — co-authored with Junchi Wu and Dr. Nitin Chopra — at the National Society of Black Engineers’ fall regional meeting held November 2012 in Montgomery, Ala. He had previously won a research award for his work at the Tuskegee Research Experience for Undergraduates’ regional conference. He was mentored by Dr. Chopra as part of an NDEF-REU fellowship program.
Over the past year, the MTE department’s Materials Advantage chapter has been extremely active. Members have won awards in casting competitions and video productions, among others. The chapter has assisted in the travel costs for its student members to attend and participate in a variety of professional meetings, including the TMS and AFS meetings in Birmingham, Ala., and Meridian, Miss. During the academic year, they organized plant tours for its members, including a trip to Nucor Steel. Beyond profession growth, the student chapter has been generous with its time by serving the community. Members of Materials Advantage participated in the CANstruction food drive for the West Alabama Food Bank that garnered front-page news in The Crimson White student newspaper. Student members also volunteered for the AFS Golf tournament fundraiser. In the past year, the local chapter even launched its own MTE Facebook page to keep everyone connected.

Materials Advantage Student Chapter Officers for the 2012-13 School Year
President: Chase Smith
Vice President: Sean Thompson
Treasurer: Jeremy Payne
Secretary: Evan Cole

Materials Advantage (http://materialadvantage.org) comprises student membership in the American Ceramic Society, the Association of Iron and Steel Technology, ASM International and The Minerals, Metals and Materials Society. Membership in Materials Advantage is a great way for students to start their involvement in the professional societies. The student chapter adviser is Dr. Nitin Chopra.

Lending A Hand
On the first-year anniversary of the tornado that struck Tuscaloosa on April 27, 2011, the Bridge to the Doctorate program went to Alberta City and assisted in a cleanup campaign within the different neighborhoods. Derrick Stokes, Angelique Montgomery and Joseph Waters are part of the Materials Science doctoral program. The Bridge to the Doctorate program is a $1 million program aimed at increasing the number of doctoral students from historically underrepresented groups in the science and engineering discipline. The program is overseen by Dr. Viola Acoff.

MTE Freshman Class Continues Academic Excellence
The 2011 freshman class in metallurgical and materials engineering has the second highest ACT average score, 29.57, in the College of Engineering. This score is more than two points higher than the College average for 2011 and the highest ever for an entering MTE class. The University of Alabama continues to recruit the best and brightest students in our nation.

Students Make E-Day A Success!
Each fall, high school students visit the College of Engineering to learn about the different engineering and computer science disciplines. Several of the MTE undergraduate and graduate students organize different demonstrations that introduce the high school students to metallurgical and materials engineering. The MTE department appreciates the team work of our students in being ambassadors for our department. Dr. Nitin Chopra, faculty adviser for the Materials Advantage Chapter, assists the students in the organization of these activities.

Look How We’re Growing
U has experienced tremendous growth over the past decade with enrollment going from 20,000 to more than 33,000 students, with nearly 4,000 of those in the College of Engineering. In response to the increased enrollment and emphasis on research, a series of four new buildings have been completed or are near completion. For the construction of the fourth and final building in the science and engineering quad, the foundry was demolished. UA has rebuilt the foundry near the student project building. The new foundry lab will open for teaching during Spring Semester 2013. The new foundry includes the following equipment and labs:

- Three Inductotherm melting furnaces for melting cast iron, steel, brass, bronze, and aluminum-based alloys
- A NASA withdrawal furnace for melting and casting superalloys under vacuum that can produce up to 25-kilogram turbine components cast into ceramic-shell molds
- Molding equipment and a core machine for making green sand and preset-based molds and cores
- Finishing equipment
- Spectrometer by Spectro Analytical Instruments
- An investment casting lab with a 3-D printer “Thermosty” by 3D Systems for making investment patterns
- A sand-testing lab and a dedicated computer lab where students can perform mold and casting design using advanced casting and ingot simulation software tools like NovaFlow&Solid by Novacast, Magma, Thercast and ProCast by ESI.

The MTE department gives special thanks to our Foundry Education Foundation board members for their continual support of our program and the new foundry laboratory. UA is one of 18 FEF-certified universities and colleges in the country.

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