

Missouri University of Science and Technology Material Advantage Chapter

Chapter of Excellence Nomination & End of
Year Report

Bretzke, Anna
2015-2016

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CHAPTER OVERVIEW

Chapter Overview




The Missouri University of Science and Technology (Missouri S&T) chapter of Material Advantage (MA) is a student organization whose purpose is to get students involved in the Material Science field and in the department which it serves, namely the Materials Science and Engineering Department at Missouri S&T. The chapter provides its members with opportunities to develop themselves professionally, get involved in the scientific community, and develop relationships with current professionals within materials research fields and the materials industry. The ability for students to introduce themselves to the scientific community is extremely important for their future involvement in the field of materials. One of the main goals of our chapter is to introduce STEM, (science, technology, engineering, and mathematics) subjects with a focus in material science, to younger students including K-12 students and underclassmen at the university. Fostering interest in science and technology in the younger generation is important for continued scientific advancement as well as for the future of material science and engineering in the U.S. and abroad. The chapter also serves to educate current students about the materials industries through showing them what industry is like, how to network with industry at professional conferences, and more. Keeping students in contact with professionals is important to our group so that members can make informed decisions about their careers. Further, the chapter provides professional development and outreach opportunities. Finally, MA is simply a group where material science students can find friends, enjoy the company of their department, and form connections that will be valuable later on in their careers.

CHAPTER OVERVIEW

CHAPTER OFFICERS

ANNA BRETZKE CHAIR	MICHAEL WALDEN VICE CHAIR - CERAMIC	JACOB BELKE VICE CHAIR – METALLURGY
		
VANCE PETITT TREASURER	ANNA MATTIONE SECRETARY	LAUREN GONNER HISTORIAN
		
AUSTIN STANFIELD PROGRAMMING CHAIR	BETHANN STOY WEBMASTER	DRS. GREG HILMAS & RON O'MALLEY FACULTY CO-ADVISOR
		 

Committee Heads

NATHANIEL GRIFFEN OUTREACH	ALI DOLL SOCIAL	ROBA ELSHIEKH PROFESSIONAL DEVELOPMENT
		

CHAPTER OVERVIEW

HIGHLIGHT

Conference Attendance

- 2nd place overall at TMS Materials Bowl
- 33 students at MS&T
- 6 students at AIST
- 4 students at TMS
- 2 students at CVD

Student Speaker

- Michael Walden – 2nd place overall

Scholarships

- Steel Internship Scholar: Mark Emmendorfer
- Steel Internship Scholar: Cameron LaPresta
- William Park Woodside Founder's Scholarship : Anna Bretzke
- William and Mary Dyrkacz Scholarship: Nathaniel Griffen
- Du-Co Ceramics Scholarship Award : Michael Walden



PROGRAMMING

Programming

FALL PICNIC

A picnic sponsored by Nucor was hosted in Lion's Club Park for potential employers before the Fall 2015 Career Fair. Company representatives and students were given the opportunity to network in an informal setting prior to the career fair. The event included a softball game and BBQ for attending students, faculty and employers.

SPRING MEET AND GREET

A dinner was hosted for potential employers before the Spring 2016 Career Fair. Company representatives and students gathered to network in an informal setting prior to the career fair. Students and employers were given the opportunity to discuss company profiles and potential job openings. The event was social. While eating Lee's Chicken to allow students and faculty to interact outside of the classroom.

INDUSTRIAL TOURS

AFRL

On October 3rd, on the way to MS&T 2015, MA visited the Air Force Research Lab (AFRL) on Wright Patterson AFB in Dayton, Ohio. At the AFRL, students visited laboratories where research was being conducted to put ceramic matrix composites (CMCs) into new engine applications, as well as metallurgical testing and materials characterization labs.

O'Fallon Castings Foundry

On November 12th, 2015 five students and professors toured O'Fallon Castings in O'Fallon, MO on another AFS/MA sponsored tour. O'Fallon Castings is a foundry that provides nonferrous investment castings to industry and manufacturing.

Olin Brass

On April 21st, Material Advantage members toured Olin Brass in East Alton, Illinois. The Olin Brass mill produces many grades of brass and is capable of melting, casting, and rolling brass. Olin Brass produces brass sheet for many customers including the US Mint.

CAREER DEVELOPMENT

Career Development

TECHNICAL MEETING ATTENDANCE

Materials Science and Technology (MS&T) 2015 Conference

Each fall, the Materials Science and Technology Conference brings together thousands of students, faculty, and industrial representatives in the materials field. Students have the opportunity to participate in competitions, to attend technical presentations, and to build their network of contacts in the field. The conference in the fall of 2015 was held in Columbus, Ohio, and was attended by over 30 students from Missouri S&T.

This year the Missouri chapter was well-represented in the student competitions, presentations, and scholarships. Andrew Schlup from the Missouri Chapter tied for first place in the Disc Golf Competition, and Michael Walden took second place in the Student Speaking Competition. Derek King and Leiren Jarvis, graduate members of the Missouri Chapter, presented at the conference. At the ACerS Award Banquet, Michael Walden received the Du-Co Ceramics Scholarship Award, and Missouri alumnus Geoff Brennecka received the Du-Co Ceramics Young Professional Award. At the TMS Award Banquet, Anna Bretzke and Nathaniel Griffen, metallurgical engineers in the Missouri Chapter, received the William Park Woodside Founder's Scholarship and William and Mary Dyrkacz Scholarship, respectively.



CAREER DEVELOPMENT

USACA 40th Annual Conference on Composites, Materials, and Structures

Three undergraduate members of MA attended the 40th Annual Conference on Composites, Materials, and structures hosted by the United States Advanced Ceramic Association (USACA) in Cocoa Beach, Florida. These members were invited to be student pages at this ITAR restricted conference which meant they were responsible for registering guests, working A/V, and monitoring the halls and sessions. Due to the small size of this conference, this event was an ideal time for these students to network with contacts in industry, national labs, and academia.

The Iron & Steel Technology (AIST) Conference and Exposition 2015

Material Advantage also attended this year's AISTech Conference in Pittsburgh, PA. Six undergraduates and graduate students were in attendance, along with several S&T professors.

TMS Conference 2016

In February of 2016, four students from the Missouri Chapter attended the 145th TMS Conference in Nashville, Tennessee. The conference began with a fierce trivia competition in which the Missouri Chapter placed second. The rest of the week consisted of technical presentations and networking with students from other universities.

Congressional Visits Day (CVD) 2016

This year the Congressional Visits Day was held on April 18th and 19th in Washington, D.C. Two Material Advantage members, Vance Pettitt and Jonathan Lapeyre, met with Missouri Representatives Blaine Luetkemeyer and Jason Smith, as well as staff members in the office of Representative Vicky Hartzler. They also met with staff of the two Missouri senators, Roy Blunt and Claire McCaskill. During those meetings the MA members advocated for the congressmen's continued support funding for Science and Technology Research and Development (R&D). The MA students and congressmen spoke about how R&D funding continues to support both the school and the students while benefitting the state and the entire country.

SERVICE

Service

CANNED FOOD DRIVE

In the spirit of giving, and of friendly competition, MA sponsored a "Metallurgy Students & Ceramic Faculty vs. Ceramic Students & Metallurgy Faculty" canned food drive with the proceeds being donated to GRACE (Greater Rolla Area Charitable Enterprise). To make things interesting, the faculty and the student leaders agreed that they would be pried if their respective sides lost. This year, the ceramic students narrowly beat the metallurgical students, and the competition was great fun for all involved.



MERIT BADGE UNIVERSITY

On February 6th, 2016 Missouri S&T hosted Merit Badge University which hosts up to 1000 boy scouts on campus that are seeking new merit badges. The materials science department hosts the composite material badge. Nathaniel Griffen, an undergraduate student in Metallurgical Engineering and Material Advantage member was the composite material merit badge counselor and was assisted by seven other Material Advantage members. Eleven scouts attended the composite material session, learned about composites, and earned their badge. Positive feedback was received from the parents and scouts.

CASA PIZZA NIGHT

Material Advantage participated in the Fraternal Order of Leader's Pizza night supporting the Court Appointed Special Advocates for children of South Central Missouri (CASA). Proceeds from the event supported children CASA provides advocacy for abused and neglected children in the Court System.

SERVICE

WYSE VOLUNTEERING

The Worldwide Youth in Science and Engineering (WYSE) 2016 finals for the state of Missouri were held at Missouri S&T this past spring. High school students were tested over subjects ranging from chemistry and physics to computer science and engineering graphics. Students were recognized for high scores in each subject and schools were recognized for the highest overall scores. Dr. Bill Fahrenholtz, a Curators' Professor of Ceramic Engineering at Missouri S&T, organized the WYSE program for the state of Missouri and asked Material Advantage students to volunteer for the event by monitoring the tests and handing out shirts.

OUTREACH-DEMOS

Over the years, a plethora of different demonstrations have been developed to show to a wide range of audiences. These include, but are not limited to: glass fiber pulling, tempered vs. annealed glass, alumina thermal shock, space shuttle tile, annealed aluminum nails, Nitinol shape memory wire, superconductivity, and several metal casting demonstrations.

Materials Day

As part of outreach, MA hosted Materials Day for local high school students. Invitations were sent out to surrounding schools which generated much interest in the event. Forty one high school students from two high schools (Waynesville, MO and Salem, MO) participated in the event. Materials Day was free to all participants. The students toured a mechanical properties lab where they learned about notched strengthening of tensile specimens, the foundry where they watched an aluminum pour and learned about metal casting, and the hot glass shop where they watched a glassblowing demonstration. The students also watched many other demonstrations including Nitinol shape memory wire, alumina thermal shock, piezoelectricity, heat treated nails, tempered glass, and metallic glass. The event was completely planned and run by Material Advantage members.



SERVICE

Prairie View Elementary School STEM Night

On March 10th, Material Advantage members participated in the Prairie View Elementary School STEM night. Over 400 elementary school students attended this event.

Rolla Middle School STEM Night

On Thursday, February 25th, Material Advantage members participated in the Rolla Middle School STEM night. Over 100 middle school students attended this event.

Society of Women Engineers Introduce a Girl to Engineering Day

The Material Advantage chapter performed material science demonstrations for 30 middle school girls at an event called Introduce a Girl to Engineering Day on March 5. Middle school girls came to the Missouri S&T campus to learn about STEM careers, particularly engineering.

7th Grade Girls STEM Day

Material Advantage members performed material science demonstrations for 7th grade girls during a STEM day. 441 girls attended the STEM day along with 103 teachers and chaperones. Approximately 40 girls and chaperones attended the material science demonstrations.

Science Center Engineering Week

This year a few members went to the Science Center in St. Louis to present demos during Engineering Week. The MA students performed demos all day Saturday and all day Sunday. The demos presented held the attention for all ages which gave us an amazing opportunity to not only promote Missouri S&T but to seed an early interest in Materials Science. The younger children enjoyed the silly putty and glass fiber pulling demos, whereas older kids and adults enjoyed demos such as tempered glass and the annealed aluminum nail. The demos were presented as people walked by to draw their attention. When there was an interest, the demo became one-on-one with an age appropriate explanation of the science behind the demo.

Girl Scout Demos

A few local Girl Scout troops came down for a tour of the Missouri S&T campus.

Material Advantage along with Kappa Delta Sorority put on materials department demos for this event. Demos included silly putty, glass fibers, memory wire and more. Girl Scouts were allowed to take jolly rancher demo kits home with them.



SOCIAL ACTIVITIES

Social Activities

WELCOME BARBEQUE

On August 27th, MA held a recruitment barbecue. This barbecue was held after the first seminar of the semester and primarily targeted new freshmen. Almost 100 students attended and many began attending MA meetings after this event.

TRIVIA NIGHTS

Every third Tuesday of the month, Material Advantage gathered a team for trivia night at The Locker Room, a local bar and grill. On several occasions, professors joined in for the fun. While the team largely did not place, on one occasion the team placed 2nd and on another the team placed 1st. By the end of the semester MA members began a friendly competition between the metallurgists and ceramists. The win-loss record for the teams is still disputed due to unresolved outcries of cheating.

DEMO TRAINING BARBEQUE

This year a training day was held to teach younger students in the department how to give the demonstrations typically performed during department tours. These tours are commonly given to prospective college students, incoming freshman, summer camp participants, and students ranging from elementary to high school. This was a fantastic opportunity to not only practice and pass down our knowledge of department demonstrations, but also to help get new students interested in our chapter and what it has to offer.

QUARTER BOWLING

A social was held at the local bowling alley where MA covered the lane and shoe costs. All food and extra games were a quarter. This gave an opportunity for MA students to take a study break and get to know one another better.

STUDY NIGHT

On December 2nd, Material Advantage hosted a study night for the students of the ceramic and metallurgy departments in the McNutt commons. Professors were present to answer questions students had about their impending final exams. Older students also tutored the younger students on what to expect on certain exams and how to solve problems in specific classes.

CHAPTER MANAGEMENT

Chapter Management

ORGANIZATION AND PROCEDURES

General Meetings

Meetings were held at least once a month and were used to inform members of upcoming events. Meeting attendance ranged between 15 and 30 members with attendance being required for meetings regarding upcoming professional conferences. Agendas and minutes were posted on OrgSync for reference.

Officer Meetings

Meetings were held every other week to allow officers to plan and organize chapter business and communicate with the chapter advisor. Chapter business included finances, social events, outreach, and industrial plant visits. These meetings were essential for organizing upcoming activities and to ensure the executive members were well informed.

Trip Planning Meetings

Special meetings were held prior to professional conferences to help plan logistics for these trips. Logistics included lodging, transportation, and student events during the conferences. Students were given contact information of other attendees, conference itineraries, and room and van assignments (if needed).

Elections

Elections were held during a general meeting on April 23, 2015. The entire officer board was elected in a trickle-down style using Roberts Rules of Order. Nominated students were asked to give a short speech outlining their credentials for the position and reason for running. Any students not in attendance were asked to create a short video speech to be played during elections.

Communication

Communication amongst the Material Advantage chapter members is primarily through OrgSync, e-mail and through bi-weekly meeting updates.

CHAPTER MANAGEMENT

MEMBER DEVELOPMENT

MS&T Leadership Workshop

This year several MA officers attended the MA leadership workshop at the MS&T 2015 Conference. This was a great opportunity to communicate with other chapters as well as get new ideas for events and management tips.

OFFICER DUTIES

Chair

The Chair is responsible for the overall guidance of the chapter. He/she sets the agenda for the general and executive meetings and is also in charge of contacting faculty and other organizations outside of the department. The Chair is also responsible for delegating tasks throughout their term as well as coordinating and completing the end of year report.

Vice Chairs

The Vice Chairs (Ceramic and Metallurgy) are responsible for setting up lab tours and demos, and also serve as a liaison between the other MSE groups. Additionally, they serve as the chair's primary assistant while also organizing the fall picnic and overseeing preparations for the different conferences.

Secretary

The Secretary is responsible for keeping minutes for executive and general meetings. He/she is also responsible for publicizing events and obtaining rooms for events. The secretary also creates a calendar for the month that is passed out at seminar so that students in the department know what events are going on.

Treasurer

The Treasurer is responsible for maintaining financial records, purchasing items, and obtaining reimbursements and grants from Material Advantage. He/she also provides financial updates at executive meetings.

Historian

The Historian is responsible for cataloging, collecting pictures, compiling articles, and cataloging events of the chapter.

Programming Chair

The Programming Chair is responsible for managing all social events during the year, as well as establishing new social events for the chapter

CHAPTER MANAGEMENT

Webmaster

The Webmaster is responsible for maintenance and upkeep of the MA website and OrgSync page, as well as the e-mail distribution group.

COMMITTEE CHAIRS

Social Committee Chair

The social committee chair is in charge of working with the programming chair to plan social events for the chapter.

Networking Committee Chair

The networking chair is in charge of scheduling and planning events with industry contacts such as plant tours and industry dinners.

Outreach Committee Chair

The outreach committee chair is responsible for planning and scheduling volunteers for outreach events such as Materials Day and Open House demos.

OUTGOING CONTINUITY

Filing Documentation

To ensure that all documents are accessible to future officers, all important chapter documents are available on OrgSync to incoming officers.

Officer Transitions

A meeting was held for outgoing and incoming officers to discuss roles and responsibilities of each of the positions. Outgoing officers were asked to outline the basic tasks that their position requires, and incoming officers were given the opportunity to ask any questions regarding the position. New ideas or suggestions were also exchanged among officers to help further grow the chapter. Additionally, incoming officers were asked to attend the last month of executive meetings to understand how meetings are run.

RECRUITMENT ACTIVITIES

The Missouri S&T Chapter of MA always has a very active recruitment process that encourages undergraduate and graduate students alike to join Material Advantage. Every semester several members of the chapter visit undergraduate classes and speak about the benefits of joining, including scholarship and career opportunities. In addition to this, the

CHAPTER MANAGEMENT

MS&T, AIST, and TMS conferences often encourage students to join so that they can attend the conferences as an MA member.

Minerama

Minerama is an event put on by the university for incoming freshman. Every organization recognized by the university is invited to attend. MA created a board with pictures representing the events that are put on throughout the school year. This event helps with recruitment for the organization and the department.

TREASURY

Thomas O'Keefe Professional Development Fund

This year the Missouri S&T material science student groups were lucky enough to receive a donation of \$15,000 from a successful alumnus, William E. Horst, who created the O'Keefe Professional Development Fund in name of the late Professor Thomas O'Keefe. These funds were used for student events including travel to the MS&T conference in Columbus, OH and AISTech 2016 which was held in Pittsburgh, PA. The funds were split up amongst the student groups including Alpha Sigma Mu, Keramos, the American Foundry Society, Gaffer's Guild, Blacksmithing Club and Material Advantage.