

Missouri University of Science and Technology

Material Advantage Student Chapter

Sunday, May 30, 2022



The Student Program for Materials Science and Engineering



Chapter of Excellence Nomination and End of Year Report

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Hayley Magby

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Chapter Officers



President
Sophie Grier
Graduated May 2022
Also involved in Gaffers Guild and
Keramos. Headed to Honeywell

Treasurer
Makayla Gamiel
Graduating Dec 2022
Also involved in Gaffers Guild,
Aerial Swing Dance, and Needle
League



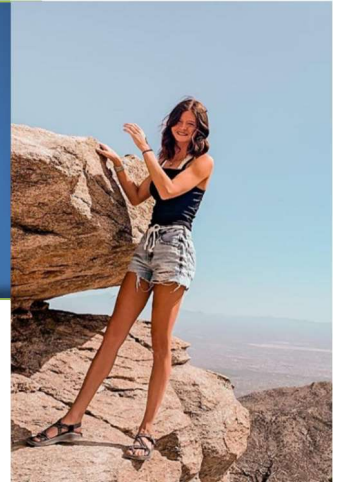
Secretary
Will Reicher
Graduated May 2022
Also involved in theatre and chior

Historian

Haylie Magby

Graduated May 2022

Active member of Zeta Tau Alpha
and heading to Watlow.



MA Vice President

Caelen Johnson

Graduated May 2022

President of American Foundry
Society, involved in Keramos and
SME

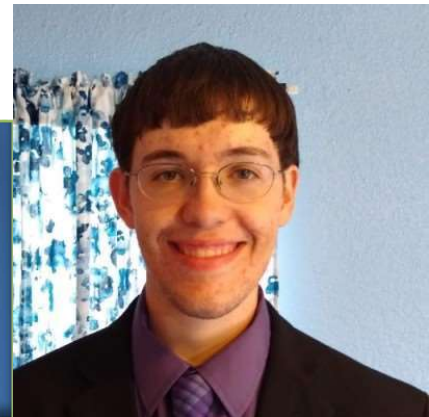


MA Vice President

Jacob Stacey

Graduated May 2022

President of Keramos, involved
in CAST. Will be attending grad
school



Chapter Overview

The 2021-2022 school year was spent focusing on recruitment and building back the chapter since the pandemic. The goal was to reach out to as many students on campus as possible to inform them about what Material Advantage has to offer. The chapter worked alongside other material science student organizations such as the Ceramic Artists of Science and Technology, the Black Smithing club of Rolla, Gaffers Guild, Keramos, and AFS to accomplish this goal. This year the club had approximately thirty active members, with additional students being involved but not official members. With a solid objective in mind the chapter was able to build a stronger community and develop interpersonal connections within the department. These connections and dedication to improving for the better of the students led the chapter to win the Remarkable Student Group award from the student council of Missouri University of Science and Technology. This award was given on the basis of “a student group that shows outstanding commitment to the principles of leadership on which the Missouri University of Science and Technology was founded. They will have shown dedication to their chosen purpose and significant contribution to the University”. This year built a strong foundation for the executive board of next year to continue improving upon.



Figure 1: The faculty advisor, Dr. Kelley Wilkerson, and Chapter chair, Sophie Grier, at the student council award ceremony.

Calendar of Events

August:

- Aug 20th-Opening week Campus Outreach

September:

- Organized Demo Training
- Sept 1st-Campus Outreach (MA)
- Sept 8th-Campus Outreach (Keramos)
- Sept 15th-Campus Outreach (BCR)
- Sept 22nd-Campus Outreach (Gaffers)

October:

- Oct 2nd-Stem Fest Booth
- Oct 6th-AIST Virtual Visit
- Oct 9th-Cross Casting
- Oct 13th-Campus outreach
- Oct 14th-Department Social
- Oct 16th to 24th-MS&T Conference
- Oct 20th--Making Demo boxes

November:

- Nov 8th-Adopt- a- sophomore
- Nov 8th to 18th-Canned food drive
- Nov 13th-Paint your own pottery CAST

December

- Dec 2nd-Demo Training
- Dec 4th-Painted a mural in the tunnel (social)

- Dec 14th-Christ Kindl Market Cotton Candy

January:

- Jan 26th-Demo training
- Jan 27th-St. Pats Science Fair judging

February

- Feb 2nd-Field trip demos
- Feb 10th-14th-Candygrams
- Feb 11th-Field trip demo
- Feb 11th-Jackbox social
- Feb 28th Field trip demo
- Feb 27th to Mar 3rd- TMS conference

March:

- Mar 9th-Breezeway outreach
- March 7th, 8th- Advising help
- Mar 14th- field trip demos

April :

- Apr 14th-Department Social sponsored by Kohler
- Apr 20th-Breezeway outreach
- Apr 22nd-Earth Day Booth
- Apr 26th- field trip demo

May

- May 2nd-field trip demo
- May 3rd- field trip demo

Chapter Management

Elections

Elections are held in person and the voting is discrete. Each nominee gave a brief introduction of themselves about their hobbies, involvement on campus, and goals. Then they said why they would like to run for office. The election takes place in a trickle down manner so if an individual runs for President but does not win, they may choose to run for Treasurer and so on. Once all the votes are counted, the newly elected officials are announced to the department and may begin transitions.

Transfer of information

Knowledge is maintained in the organization in multiple ways. All MA related documents are made and kept in a shared file system. This was a google drive, but the university is no longer supporting google. All of the files were transferred over to a one drive (Microsoft teams). Each officer also updates a transition document throughout the year to keep track of helpful information and what worked or did not work. The officer then shares these documents during a transition period with the newly elected individuals to explain the positions and answer any questions that may arise. The incoming officers were invited to the rest of the executive meetings for the semester to see how the club is run behind the scenes and provide a smoother introduction to events. They were even eager enough to learn hands on with an outreach event taking place after the elections.

Finances

At the start of each year the chapter reaches out to industry professionals to gain sponsorship funding to attend conferences. The individuals contacted include recruiters who visit the school for the career fair, speakers for seminars, department alum, and a few others connected to the Material Science department. A few fundraisers take place during the year as well, such as selling candygrams for Valentine's Day. The rest of funding for attending conferences is covered by the Thomas O'Keefe Professional Development Fund. This is an account that is shared among the six department student organizations, Alpha Sigma Mu, Keramos, the American Foundry Society, Gaffer's Guild, Blacksmithing Club and Material Advantage.

At the start of both semesters the Treasurer is tasked with creating budgets for events that take place during the year. The budgets are a starting place to know what is needed for socials and demo supplies. All the spending and incoming money are documented in a shared spreadsheet with the receipts scanned in. Additionally, there is funding provided to student organizations through the school. This Material Advantage chapter had not been previously set up to use these funds but it has been updated and should be a viable source of funding for the future years to come.

Reporting duties

Weekly executive officer meetings including the faculty advisor were held during the school year. This was important to keep the officers involved on upcoming events as well as let everyone update the team with what they had accomplished during the week. There was an agenda for every meeting to guide the meetings smoothly and ensure certain details were not forgotten. There were general meetings for all members monthly to report on demos, socials, and events to get involved in.

Record keeping

The Secretary takes minutes at each meeting and adds them into the shared file drive for others to review later. They also make notes of important dates events are happening and sends out reminders. Another way of keeping records is by having the historian take pictures to document such events.

Website management

The Missouri S&T chapter does not have a Material Advantage website however, there is an Instagram page. There were “exec spotlights” to better know the officers. The Historian also covered important achievements such as the numerous awards won at the MS&T conference. There is also a department Discord that MA helps facilitate to provide updates about visiting speakers or ask questions.

Recruitment

MA participated in multiple events run by the university in order to recruit students to MA. These events included hosting bowling at the glow bash during opening week of the fall semester. MA also had a tables at advising days for incoming freshmen. MA also hosted tables outside on campus to try to recruit current students.

Figure 2: MA exec members at the glow bash with the bowling set. From Left to right: Will Reicher, Makayla Gamiel



Technical Programming

Material Science and Technology (MS&T) 2021 Conference

Twelve students attended MS&T 2021. This included 10 undergraduate students and 2 graduate students. Three students participated in the undergraduate poster competition. Sophie Grier placed 1st in the mug drop competition. Elliot Sutalski won Most aesthetic Mug. Garrett miller placed 2nd in the ceramic disc golf competition. Stephen Shellaburger placed 3rd in the ceramic disk golf competition. Jacob Stacy won most Aesthetic Disc. Amelia Martinez won 1st place in the student poster presentation competition.



Figure 3: A majority of the team with their medals and items. From back left working forward, Dr. Gregory Hilmas, Will Reicher, Jacob Stacy, Garret Miller, Stephen Shellaburger, Nick Timme, Catherine Colletti, Elizabeth Sayre, Sophie Grier, Dr. Kelley Wilkerson, and Elliot Sutalski.

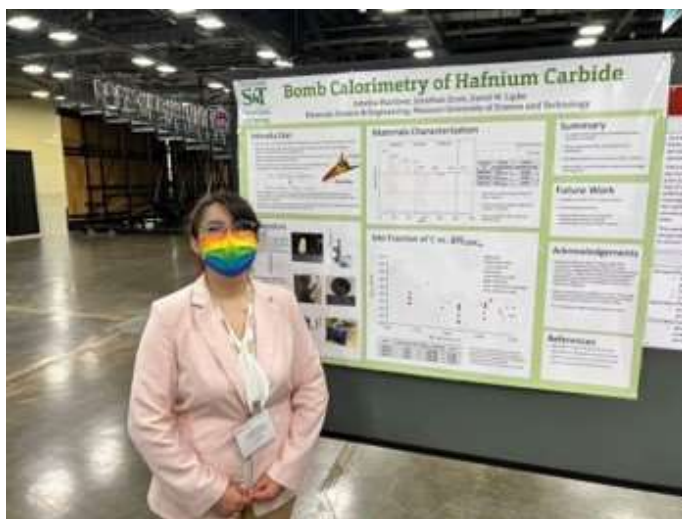


Figure 4: Amelia Martinez with her winning poster.

TMS 2022

Eight students from this chapter attended TMS 2022. These students participated in the Materials bowl competition and the Blade smithing competition. Missouri S&T's team placed first in the blade smithing competition.



Figure 5: The blade smithing team with their advisor. From left to right: Kyle Hayden, Dr. Newkirk, Michael Fitzmaurce, Hans Pommerenke, and Jerimiah Cohn.



Figure 6: The sword that the blacksmithing brought to the competition.



Figure 7: The material bowl team. From left to right Jeremy Heisserer, Caeleen Johnson, Sophia Malpocker, and Sophie Grier.

CastExpo 2022

Students from this chapter also attended the CastExpo 2022. Students participated in the Foundry Education Foundation undergraduate research competition. Caeleen Johnson placed first, and Jackson Piontek placed second in this competition. Students also participated in the Cast in Steel competition.

Career Development

MA hosted a few events to help with career development. One type of event that would be useful but was unable to occur this year would be plant tours.

MA Adopt a Student

The MST MA chapter decided to create a mentorship program called “adopt a student” to help mentor the younger classroom who had missed out on opportunities to bond with the department. There were 2-3 mentors per mentee so that any question they might have could be covered. It also worked out so that the mentees could hear about various experiences and decide what is best for themselves. Many of the mentors and mentees went out to lunch or trivia nights together to form a connection and from there they could discuss experiences more openly. Mentors told them about how co-ops and internships worked, what to do to prepare for career fairs, and benefits of networking.

Science Fair

Many students in MA volunteered to judge a science fair at a local K-8 school. This allowed the college students a chance to evaluate the experiments done and learn how to provide constructive criticism while being encouraging. It is a great opportunity for those who want to work in academia later on but also to help reinforce skills when it comes to conducting their own experiments.



Figure 8: An MA member judging a 4th graders science project.

Leadership Training

The President and Treasurer both attended a leadership training put on by the student union board hosting. This was an opportunity to learn how to better connect with individuals outside the club to get them involved. It also provided insight on how to get individuals who are involved to take on higher roles. It was a neat experience and opened our eyes to concepts that had not been explored in the club before.

Networking Between student Leaders

Once a semester the student leaders in material science related organizations were invited to MA faculty advisors house for lunch. This helped foster relationships between the students and an opportunity to share leadership strategies.

Advising Assistance

Tables were set up in the campus housing that is typically underclass men. This was done to help advise underclassmen wanting to take material science related courses. Upperclassmen in the material science department were there to answer any questions that anyone had about these courses.

Demo Trainings

Periodically throughout the semester demo trainings were held. These taught the students how to host demos for classes and outreach events. It acts more of a guideline to show the students what equipment is available to use for the demos. These demos are a great way to reinforce existing knowledge because there has to be an understanding already to teach others new concepts. It also helps develop public speaking skills and promotes leadership.



Figure 9: Noah Weyrauch teaching undergraduate students how to talk about material science and perform demos.



Figure 10: Noah Weyrauch teaching underclassmen how to perform a demo involving tempered glass.

Service

MA hosted many service events this year to give back to the community.

Canned Food Drive:

Material Advantage organized a canned food drive for G.R.A.C.E., a local food pantry. Participation in the food drive was encouraged by framing the canned food drive as a competition between students and professors in the material science and engineering department at Missouri S&T. The friendly competition helped raise over 2,000 non-perishable food items. If the students won, one of the professors would be pied in the face. If the professors won, the MA exec team would have to do karaoke in front of the entire department. Fortunately the students won the competition.



Figure 11: Students helping to load the cans collected in the canned food drive onto a truck to be transported to the food bank.



Figure 12: Dr. Hilmas right after being pied in the face

Demonstrations to Children

The chapter also hosted several classes of children ranging from 2nd- 12th grade to show demos and teach about materials. Depending on their age the demos ranged from how cotton candy resembles fiberglass all the way to how crystal structures affect the material properties. This was done to help promote the students interest in STEM and in material science.



Figure 13: Highschool students watching a demonstration of a glass stringer being pulled.



Figure 14: 4th grade students participating in multiple demos including air dry clay, cotton candy, and liquid nitrogen on marshmallows.

Campus Outreach

MA organized tables and demonstrations to be on campus multiple times each semester. The goal of these booths was to teach students on campus what material science is and how it is important. These events also served as recruitment opportunities. MA received help from the other student organizations. BCR hosted a demo of black smithing. Gaffers guild has a “break the stress” activity where students have the opportunity to break glass bottles using discarded paperweights. MA would make cotton candy at these demos and do a jolly rancher demo.

MA also participated in events such as earth day and advising days for incoming freshman. For the earth day booth, MA discussed recycling of glass and made cotton candy. MA also partnered with Gaffers Guild to show how glass was being recycled on campus. Advising days were relatively informal and let students ask any questions they had while provided feedback on our experiences.

Social Activities

Social activities were a priority this year to help recruit members but also to give students a break from all their hard work.

Trivia night:

A trivia night was hosted in the fall semester at a local restaurant called Hoppers. This event was held to introduce the underclassmen to the upperclassmen. Because of classes being online last year due to covid, the relationship between students was not as strong as they were before. This event was to help encourage those relationships to form again. Approximately thirty two people attended trivia night.



Figure 15: Students and faculty at trivia night.

Material Science Socials:

This event was kicked off by a game-night sponsored by Nucor. There were card games, cornhole, throw the clay at a target, and of course free pizza. About fifty people showed up and everyone had a blast. This was great for freshman to meet upperclassmen and become more comfortable with the professors in a relaxed manner.

There was another social in the spring semester that was hosted by MA and sponsored by Kohler to thank everyone for their involvement during the year. This event was an outdoor game night so students could burn some energy and get into the fresh air before finals came up. There were volleyball games, cornhole, and ladder golf. Food was provided and had a

turnout of about 60 people. Students and faculty alike showed up to mingle. There were also Kohler reps around if students wanted to talk in a low stress environment.



Figure 16: Students having fun the spring social(left) and the fall social (right).

Candy-Grams:

Candy grams were done as both a fundraiser and a way to show appreciation for classmates and faculty. Individuals were encouraged to write a personal note on the cards which were delivered with a lollipop to the recipient on Valentine's Day.

Discord Social:

During the same week a Discord social was also hosted so students could connect online. This event had a lower turnout of less than ten people but those who went enjoyed it. With more advertising and adjustment it could be a fun way to connect over breaks when everyone heads home.

St. Pats Celebration Participation:

A month later the chapter decided to participate in the St. Pat's events hosted by the school. A queen and knight were nominated and represented the organization at several events. Although they did not win they had a great time meeting individuals from other organizations and the knight was recognized as an honorary knight.



Figure 17: The MA queen with other queens who were MA members but representing other student organizations.

Merchandise:

Merchandise was also ordered to create unity within the organization and show pride. The first type was hydroflasks with a materials theme printed onto them. The next type of item was polos, there was a competition to see who came up with the neatest design to be embroidered on. A few students also worked together to come up with a design for the materials department to be printed on the back of the St. Pat's sweaters.



Figure 18: The polo, hydroflask, and candygrams and sweatshirt design are displayed.

May 10, 2022

To whom it may concern,

We are writing this letter of support as the faculty advisors for the Missouri University of Science and Technology Material Advantage (S&T MA) Chapter for the Chapter of Excellence Program. The S&T MA chapter has been critical to the Materials Science and Engineering Department's success this past year. The student's committed innumerable hours to service and outreach. I would like to highlight some of the achievements that stand out over the past year.

S&T MA was just recognized as the *Remarkable Student Group 2021-2022*, by S&T's student council. This award is given to a student group that shows outstanding commitment to the principles of leadership on which the Missouri University of Science and Technology was founded. They will have shown dedication to their chosen purpose and significant contribution to the University.

S&T MA redesigned the qualifications to be sent to MS&T this year, requiring participation in a student competition. This redesign really got students engaged in the department prior to the conference, and also provided a way for them to feel more invested in the conference once they arrived. Ultimately, S&T MA sent 10 undergraduate students to MS&T 2021 who all competed in at least one of the following student competitions: undergraduate poster competition, aesthetic and mug drop competition, and the aesthetic and disc throwing competitions at MS&T 2021. The students ultimately took first place in the undergraduate poster contest, most aesthetic mug, most aesthetic disc, and mug drop. They also placed 2nd and 3rd in the disc golf competition.

S&T MA was also able to promote cohesion among all of the student groups within the MSE department, including Blacksmithing, Ceramic Artists of S&T, Gaffer's Guild, Keramos, and American Foundry Society by having the president of each organization participate in executive meetings with S&T MA. Ultimately this led to many hugely successful outreach and recruitment events on campus, including our famous McNutt Breezeway events where students from around campus could participate in glazing coasters, creating bottle openers, break the stress with glass bottles, as well as many material science demonstrations. In addition, S&T MA organized events (12 events) to show off material science to K-12 students.

Professional development is also important for our students and S&T MA provided many opportunities for our students. Some events include adopt-a-sophomore, student advising sessions, and demo training. Each of these events provided great opportunities for students to work on their communication skills and technical skills as engineering.

Student involvement was a challenge as we emerged from over a year of virtual classes, and minimal in person interactions, but the S&T MA chapter returned stronger than ever, and ready to do great things in 2021-2022. We strongly recommend the S&T MA chapter for the Chapter of Excellence Award this year.

Sincerely,



Kelley R. Wilkerson and Ronald O'Malley

Faculty Advisors for S&T MA Chapter
