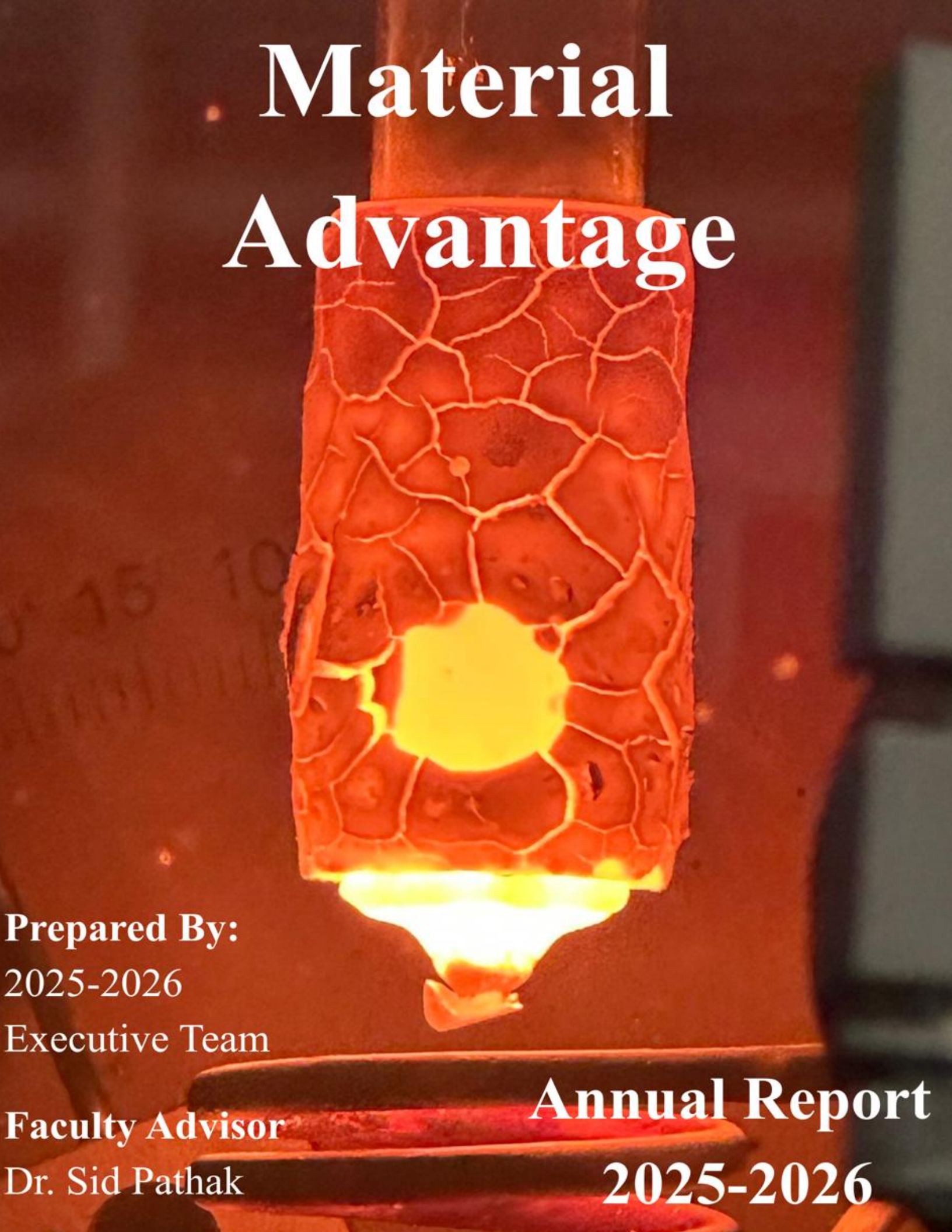




Material Advantage

Prepared By:

2025-2026

Executive Team

Faculty Advisor

Dr. Sid Pathak

Annual Report

2025-2026

2025-2026 Iowa State University Executive Board

*The cover image features an image taken during an experimental melt spinning run at Ames National Laboratory. This image reflects the spirit of innovation, collaboration, and technical excellence that our chapter strives to promote.



ISU Material Advantage Chapter accepting the Chapter of Excellence Award for 2024-2025 academic year at MS&T 2025



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2025-2026 Executive Board

Chair:
Dylan Jacks



Fundraising Chair:
Jack Page



Vice Chair:
Henry Devenport



Treasurer:
Joshua Aardahl



Vice Chair:
Arush Naik



Outreach Co-Chair:
Charles Frayman



**Outreach Co-Chair:
Jordan Ryner**



**Graduate Outreach Chair:
Jordan Steinmetz**



**Safety Chair:
Evan Birky**



**PR Chair:
Melissa Johnson**



**Social Chair:
Maria Wagner**



**Materials Camp Coordinator:
Erik DeMeyere**



Chapter Overview



ISU-MA (Material Advantage Cardinal & Gold) is an undergraduate-led student organization at Iowa State University focused on providing value in various forms to students at Iowa State, most commonly Engineering students, with a particular focus on Materials Science & Engineering (MSE). ISU-MA is open to all students and strives to promote MSE through extensive professional development, technical programs, and outreach.

Mission

ISU-MA strives to promote excellence in Materials Science through professional development, growth of technical skills, K-12 outreach, advocacy, community building, and equipping students with skills and experience. This is achieved through our 6 primary objectives and by working closely with our MSE department.

Chapter initiatives & Objectives

1. Professional Development

We facilitate meaningful professional growth by encouraging and supporting student participation in national conferences such as MS&T 2025 and TMS 2026. These opportunities allow students to present research, engage with technical societies, expand their professional networks, and participate in speaking, poster, and knowledge competitions. In addition, we organize meetings with industry professionals to provide career guidance, networking opportunities and insights into specific industries along with providing resources for scholarship and fellowship applications to support students through their education, positioning them for success beyond their undergrad or graduate education.

2. Technical Development

Our technical development opportunities provide students with industry-relevant skills beyond the standard undergraduate curriculum, including leadership, effective communication, and technical presentation experience through industry guest speakers, and career development workshops to ensure students have key skills to transition to industry or research careers. Industry professionals offer insight into the hiring processes, including what companies seek and provide guidance on resumes, interviews, networking, and aligning academic experiences with industry needs. They also share career advice and insights into their own experiences.

3. Outreach and Education

We are committed to broadening awareness and interest in Materials Science and Engineering through impactful outreach efforts. Our members regularly engage with local K–12 schools and youth programs to deliver, hands-on STEM demonstrations that inspire curiosity and make concepts accessible. These outreach activities also provide our members with the opportunity to develop communication and leadership skills while contributing meaningfully to our local schools and community programs.

4. Social

We strive to increase interactions across grade levels, enabling underclassmen to meet and form bonds with upperclassmen through mentorship, networking, and peer mentorships. Increasing ability to form meaningful relationships, and both formal and informal mentoring through relaxed social events and educational community outreach, creating a sense of belonging within the MSE department. This further encourages more involvement in our chapter, especially in outreach.

5. National Advocacy

Promoting the importance of advancement in materials science and engineering research through national advocacy by engaging with policy makers and advocating for increased national funding for fundamental and applied research. By participating in Congressional Visits Days (CVD) students are given an opportunity to engage with policy makers in Washington D.C and are able emphasize the role of materials innovation in advancing technology, sustainability, STEM education, and national security.



ISU-MA 2026 CVD delegation in Washington D.C

6. Community Engagement

We recognize that creating value for students extends beyond organized club activities. While our initiatives are structured through our chapter, the culture we foster reaches further, aiming to impact students throughout the Materials Science and Engineering department regardless of formal involvement.

Not all students have the capacity or interest to commit to a club, but many still benefit from the environment of support, collaboration, and shared identity that ISU Material Advantage cultivates. Our chapter plays a key role in shaping the undergraduate experience in MSE by promoting informal mentorship, peer connection, and access to academic and professional resources.

This is accomplished through collaboration with department faculty, advisors, and peer mentors. Together we work to ensure that students feel connected to one another and supported throughout their academic careers. Through consistent communication, inclusive programming, and everyday presence in departmental spaces, ISU Material Advantage helps foster a sense of belonging and a shared culture of growth.

Key outcomes of this engagement include:

- Strengthened inter-class relationships through informal mentoring and networking.
- Increased student engagement with department resources and events.
- Greater cohesion among student cohorts, improving academic and social communication.
- A consistent feedback loop between students and faculty, helping shape departmental priorities like outreach, and improving our education program

ISU Material Advantage's influence is not limited to those who attend our meetings—it is embedded in the day-to-day experience of being a student in the MSE department at Iowa State. By integrating our objectives into the broader academic community, we help create a more cohesive, connected, and supportive environment for all.

2025-26 by the Numbers

- 80+ active members
- 39 major events
- 20 outreach programs
- 15 MS&T attendees
 - 3 TMS attendees
 - 5 CVD attendees
- 20 Materials Camp participants
 - \$13,500 annual budget
- 4th consecutive Chapter of Excellence Award
- Host site for ASM Materials Camp®-Teachers

Calendar of Events

The calendar of ISU-MA events is below. For the sake of brevity, the following recurring events are **NOT** included below:

1. Officer Meetings: 6:00 pm to 7:00 pm every other Tuesday (11 meetings total)
2. Friday After Class Pizza Social (FAC): 5:30 pm - 7:00 pm every other Friday (15 events total)
3. Pizza Fundraising: 11:00 am - 1:00 pm every Tuesday (26 events total)

Count	Event	Date	Description
1	Destination Iowa State	Thurs, Aug 21	Outreach to New ISU Students
2	First General Meeting (24 attendees)	Thurs, Sept 4	General Information about MA and Events
3	Engineering Career Fair: Student Org Showcase	Wed, Sept 17	Outreach to Employers
4	MS&T 2025 (15 attendees)	Sept 27-Oct 1	Conference/Professional Development
5	Engineering Clubfest	Thurs, Sept 29	Outreach to ISU Students
6	Second General Meeting (32 attendees)	Thurs, Oct 9	General Trivia and Community Outreach
7	EEE Student Organization Fair	Fri, Oct 10	Club Advertising and Outreach to ISU Students
8	Cyclone Family Weekend	Sat, Oct 11	Club Advertising
9	BME 1600 Outreach	Fri, Oct 17	Club Advertising to BME Students
10	Trivia Night 1 (19 attendees)	Tues, Oct 28	Chapter Social Event
11	F25 MA/ASM Materials Camp	Thurs, Nov 6	K-12 Outreach/Education
12	Third General Meeting (16 attendees)	Thurs, Nov 6	Alum Guest Speakers from Conagra Brands
13	Fellows Sawyer STEM Night	Fri, Nov 7	K-12 Outreach/Education
14	QuickyKwiz (10 attendees)	Sat, Nov 8	Social Event/Competition
15	Ankeny Centennial High School Career Show	Mon, Nov 10	K-12 Outreach/Education
16	Trivia Night 2 (15 attendees)	Thurs, Nov 13	Chapter Social Event
17	Sawyer STEM Night	Thurs, Nov 13	K-12 Outreach/Education
18	Fourth General Meeting (14 attendees)	Thurs, Dec 4	General Trivia and Community Outreach
19	MA Bar Crawl	Thurs, Dec 4	Chapter Social Event
20	Future City CCE Program	Sat, Jan 17	K-12 Outreach/Education
21	Trivia Night 3 (7 attendees)	Thurs, Jan 29	Chapter Social Event
22	ISU SWENext Gilbert HS	Tues, Feb 3	K-12 Outreach/Education
23	Fifth General Meeting (27 attendees)	Thurs, Feb 5	Guest Lecture from Dr. Alan Constant
24	First Lego League	Sat, Feb 7	Local Community Outreach
25	Trivia Night 4 (12 attendees)	Thurs, Feb 12	Chapter Social Event
26	Urbandale High School Outreach	Thurs, Feb 26	K-12 Outreach/Education
27	Sixth General Meeting (16 attendees)	Thurs, Feb 26	Guest Speaker from Guardian Glass (Koch Industries)
28	Meaker STEAM Night	Thurs, Feb 26	K-12 Outreach/Education
26	Scholar's Day Resource Fair	Sat, Feb 28	Outreach to ISU Students
27	Trivia Night 5 (8 attendees)	Thurs, Mar 5	Chapter Social Event
28	TMS 2026 (3 attendees)	Mar 14-17	Conference/Professional Development
29	MA CVD 2026 (5 attendees)	Mar 24-28	Conference/Professional Development
30	Edwards/Mitchell STEM Night	Thurs, Mar 26	K-12 Outreach/Education
31	Admitted Student Day	Fri, Mar 27	Community Outreach
32	PowerFilm Plant Tour (5 attendees)	Mon, Mar 30	Company Facility Tour
33	Trivia Night 6 (12 attendees)	Thurs, Apr 2	Chapter Social Event
34	Executive Elections	Thurs, Apr 16	Routine Club Maintenance
35	KaleidoQuiz (28 attendees)	Apr 17-18	Social Event/Competition
36	Meet 'n Greet with Dow Chemical (5 attendees)	Wed, Apr 22	Professional Development and Networking
37	MSE Awards Ceremony	Thurs, Apr 23	Department Awards Ceremony
38	Trivia Night 7 (9 attendees)	Thurs, May 1	Chapter Social Event
39	MA Bar Crawl	Friday, May 1	Chapter Social Event

Chapter Management

Elections

Elections for ISU-MA were held on April 16th. Transition documents were sent from the outgoing board to the incoming board. Additionally, required one-on-one meeting times between outgoing and incoming officers (of the same executive position) were set. In these meetings, it was discussed how to be successful in the incoming board's new roles. Contact info was also exchanged between the old and incoming primary chairs to allow for a more seamless transition and guidance in the future.

Generally, each officer's role is assumed to be a year-long responsibility. However, to cater to students that accept co-ops, internships or otherwise take semesters away from ISU, a transfer of responsibility can be made to a new officer, or they can continue leadership remotely (depending on the role). This encourages the continuity of the organization while enabling members to follow their unique professional journey. For example, this year our Treasurer, Joshua Aardahl, took an internship for the spring semester, and his position was transferred to Kameron Goldsberry.

Finances

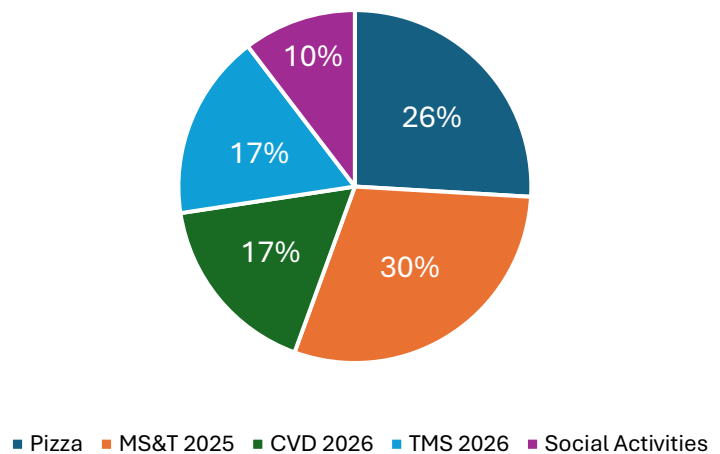
ISU-MA had a total budget of nearly \$13,500 for the year, split amongst a few of our main events, with a set of discretionary funds set aside for items like food and refreshments for meetings and small events. This funding came from awards, departmental support, and both internal and external fundraising. Additionally, a sponsorship packet has been sent to several companies including Honeywell, Conagra, ATI, and Boston Scientific.

Internal fundraising for MA has become traditional in the form of ISU-MA's weekly pizza sales. In a partnership with Papa Johns, ISU-MA buys pizza at a discount from Papa Johns every Thursday. This discount to ISU-MA allows the sale of pizza at fair prices and yields about \$100-150 each week, allowing us to fund many of our social activities. These low prices and consistent appearances have built good reputation with students both in and outside of ISU-MA's member base, allowing ISU-MA pizza sales to act as both a consistent fundraiser and college-level MA outreach.

ISU-MA works with the company, Levy Restaurants, to staff local sporting events at Iowa State University. ISU-MA occasionally staffs a food stand at one of these events and make a portion of the sales and whatever tips Levy customers give to ISU-MA. ISU-MA attended many of these events to fund our largest expenses, like conference travel.

Much of this budget went towards sponsoring student attendance at professional conferences, including MS&T 2025, TMS 2026, and CVD 2026. Additional purchases were made, such as sponsoring Friday After Class (FAC) bi-weekly, maintaining outreach supplies, purchasing ISU-MA merchandise, and sponsoring the ISU-MA teams of Kaleidoquiz (KQ) and Quiky Quiz (QK).

ISU-MA Expenses 2025-2026



Executive Board Responsibilities

Chair: Shall be the chief executive officer of Material Advantage; Shall handle all non-delegated tasks; Preside over all officer (minimum 1/mo) and general (minimum 1/mo) meetings & ensure proper meeting preparation; Shall sign any documents which may be lawfully executed on behalf of Material Advantage that are not delegated to the Faculty Advisor; Shall complete all duties as required by Material Advantage™ Student Program National; Shall appoint chairpersons of special activities as the need arises, adjusting properly to the needs of the organization; Represent Material Advantage on campus; Assist with member engagement, recruitment, and retention. Must always act professionally and represent ISU Material Advantage and the ISU MSE department.

Vice Chair (2x): In the absence or disability of the Chair, shall assume and perform the duties of the Chair and exercise the powers of that office; Schedule meetings and events with appropriate University offices, coordinating with the Risk Management Chair as needed; Coordinate organization promotion and publicity of events; Generally, support the Chair with all duties; Assist with member engagement, recruitment, and retention.

Treasurer: Shall have charge, custody, and be responsible for all funds of Material Advantage; Track orders, funds, and expenses, conforming to University standards and p-card standards; Log funds into and out of the Organization cash box; Organize paperwork for purchases, ensuring the club's tax-exempt status is applied; Solicit funding in conjunction with the Chair; Secure additional funding as needed, working with Fundraising Chair(s).

Outreach/Education Chair (2x): Primary contact and organizer for K-12 and University outreach/education events; Update and maintain the outreach kit, introducing new outreach demonstrations as needed; Ensure proper staffing and training for outreach members; Schedule and manage all outreach events; Communicate needs to the Executive Board to ensure continued outreach success.

Freshman, Sophomore, Junior, and Senior Engagement Committee Chairs: Secondary organizers and contacts for K-12 or University outreach events; Update and maintain the outreach kit, adding outreach demonstrations as needed; Communicate outreach opportunities to the Chair's respective class, encouraging attendance at monthly events and conferences, along with recruiting new outreach members as anticipated or needed.

Fundraising Chairs: Reliably and consistently ensure ISU-MA operates successful fundraising events; Manage logistics and staffing for fundraising events; Ensure fundraising events are successful, gauging the feasibility of current or future fundraising events. Consistently successful fundraising events of note: Papa John's Pizza Sales every Thursday at lunch, staffing University exams as proctors, pop can redemption.

Social Chair: Responsible for organizing ISU-MA social events; Work with Treasurer to ensure necessary items are provided; Collaborate with Secretary for advertising social events; Ensure inclusivity at all events; Collect feedback from members to improve future social events.

PR Chair: Responsible for updating and maintaining social media accounts, creating them as necessary; Taking images at all Organization events; Coordinating with Secretary to disseminate information about general events; Ensure engagement in the Organization; Manage the ISU-MA websites; Managing the sharable Google Calendar of all MA events; Ensure networking capabilities for members.

Materials Camp Coordinator: Responsible for the organization and execution of the MA-ASM Materials Camp. This includes working with the Risk Management Chair to set up the event authorization with the College of Engineering, the ISU MSE department for lab tours, demos, and assistance throughout the day, and the high schools to bring kids to campus to learn about materials science and engineering.

Risk Management Chair: Responsible for ensuring events associated with the club conform to the standards set forth by Iowa State University's Office of Risk Management. This includes ensuring proper safety measures are taken during outreach events and proper food or merchandise handling during fundraising events. Also responsible for making proper travel arrangements are made according to the standards set by ISU's Office of Risk Management.

Faculty Advisor: Maintain communication with university administration and the Department of Materials Science and Engineering; Assist with leadership development of organization officers; Provide guidance and support to the executive team; Serve as a resource for continuity and institutional knowledge; Support the organization's mission and goals through active engagement.



Siddhartha Pathak, faculty advisor since 2020

Member Recruitment

Officer & Member recruitment is accomplished through:

- Mass Emails to ALL undergrads and grad students at ISU through MSE Department email lists
- General networking within the university and the MSE Department
- One-on-one meetings with interested individuals
- Social media accounts
- Outreach events internal to Iowa State
- Several classroom visits to into to MSE courses
- Info events for non MSE majors interested in switching majors
- High School campus visits to grow interest in materials engineering as a whole
- Word of mouth

Officer recruitment within ISU-Material Advantage emphasizes the development of leadership, project management, and interpersonal skills, areas underrepresented in current curriculum. The organization provides a valuable platform for students to strengthen these competencies while contributing meaningfully to the campus and broader professional community.

Ensuring Continuity and Continuous Improvement

In past years, ISU-MA has had very strong executive teams and leaders. Several transitions, however, left the organization scrambled and confused, unsure of how to succeed in these new roles. Therefore, this year's team has taken further steps to ensure continuity and improvement between elections.

Hold election early for a supervised transfer period

Since elections, newly elected officers have immediately taken on the responsibilities of their roles. They have shadowed the current officers, had one-on-one meetings, and frequently asked questions. They have attended officer meetings and have a general understanding of how to perform their respective duties. Additionally, contact information has been exchanged to ensure that questions can be asked when the need arises.

Ensure Key Information is Accessible & Written Down

To minimize information loss among newly elected officers, there is a major emphasis on writing key information down in an accessible place for new officers. Along with the record and access to online files, and updated exec member transition document was created and implemented providing all necessary and helpful information to succeed in the responsibilities of their chair, including descriptions of what they did, photos, issues they had along the way, and contact information of the outgoing officers, who are willing to answer questions. Additionally, officers presented upon the work they between each executive meeting, and those records were saved as a resource to future executive boards.

Prolonged Mentorship in Demanding Roles

While it is not required of any position, it has become a tradition that officers in the more demanding roles do not run for reelection during the term they graduate. This allows them to serve as a mentor for the new officers in their past position for at least one semester. This has proved very helpful for positions that have large learning curves, such as the Chair and Treasurer positions.

Technical Programming

Overview

To fulfill our professional and technical development initiatives, we host monthly technical meetings with industry and research guest speakers. These guest speakers are often able to relate better to students looking to go into industry than professors and can give more tailored advice. Along with those, we hosted our second Materials Camp in collaboration with the ISU MSE department and the ASM Materials Education Foundation. We also participated in the ISU MSE awards ceremony, presenting awards to two outstanding faculty.

Technical General Meetings

The ISU-MA chapter holds monthly general meetings, aimed at providing value to members through gaining insight from industry professionals and elucidating information about future career paths and how to get there, and more. A few general meetings are highlighted below. This gives an incredible opportunity to network and ask questions of current engineers and researchers. This section will highlight some of the more technical meetings. Typically, these general meetings see 15 to 25 attendees, varying with how busy the time of year is.

November General Meeting – Conagra Alumni Visit

Conagra Brands is a North American packaged food company that deals with a large array of shelf, refrigerated, and frozen foods, including the packaging process and how they are constantly on the look for new, sustainable materials. Two Iowa State University alumni came to the ISU campus and gave an overarching review of their company values, brands, opportunities within the company, and an insightful talk on some of the problems that each engineer has faced in the past. Through an informative presentation with a thorough Q&A afterwards, many students realized that being a materials engineer can take form in many ways, often unexpectedly. Additionally, Conagra offered internship and development opportunities, which several students took interest in and applied for.



February General meeting – Guardian Glass (Koch Industries) Visit



After several MSE students visited the Guardian Glass plant in Dewitt, Iowa in the Fall of 2025 for a class, ISU Material Advantage wanted to have Guardian come to ISU campus to give an overview of all the glass manufacturing they do, as well as a look into Koch Industries. Guardian Glass manufactures glass for many industries including automotive and construction, and Koch Industries has several companies such as Guardian Glass, Georgia-Pacific, Flint Hills, INVISTA, and more. After a wonderful presentation by one of their engineers out at the plant

in Dewitt, Randy Dvorak, questions continued for a good amount of time and eventually the meeting concluded well over an hour after the meeting began. Multiple students spoke with him about future opportunities and one of our vice chairs, Henry Devenport, participated in a day long tour of the plant which involved participating in day-to-day operations and meeting the lead engineers.

Technical Programming (cont.)

MSE awards ceremony

Near the end of the semester, the ISU Materials Science and Engineering department held an awards ceremony, and our Material Advantage chapter was able to present some awards to recognize the talented professors at Iowa State University. This awards ceremony fosters a tighter knit community by recognizing achievements and outstanding people who do amazing work for the ISU MSE department. Additionally, there is an informal networking event afterwards where many students, staff, and faculty can interface with people they wouldn't normally meet, bolstering connections within the department.

At this awards ceremony, 11 students and 4 faculty were inducted into the brand-new Alpha Sigma Mu chapter at Iowa state, 24 scholarships were awarded to current undergrad and graduate students, and the Material Chapter of Excellence award was presented so students not able to make it to MS&T could see it. Induction into Alpha Sigma Mu honors exceptional students and brings them into a network of like-minded peers through which they can collaborate with and seek guidance and opportunity. And scholarships handed out to students enable them to continue their education and fill them with a sense of pride at their hard work.

ISU MA Faculty awards

Our Material Advantage chapter, serving as the main organization in the department, presented two brand new faculty awards from MA, and from all students. ISU MA Chair Dylan can be seen presenting awards at the Awards Ceremony. The awards, who they were presented to, and a quote from students during the voting are as follows:

Alpha Sigma Mu
symbol awarded
to inductees



Chair Dylan Jacks
Presenting at MSE
Awards Ceremony



Prof. Xiaoli Tan was awarded the MA 2026 ASTM Standard Award

ASTM Standard Award – This award is to recognize a faculty member who constantly strives to improve their classes and coursework and sets the bar for teaching and communication. They internalize student feedback and uphold a level of professionalism and consistently that we should all try to embody. This award was presented to **Dr. Xiaoli Tan**.

“his teaching style is constant for each. He is consistently passionate about what he teaches, while modeling the professionalism that he expects.”

Ductility Award – This award is to recognize a faculty member who has demonstrated exceptional flexibility and support under pressure, helping students navigate challenges without breaking. Their resilience and willingness to adapt made learning a smoother experience for everyone. This award was presented to **Dr. Ralph Napolitano**.

“he offered many opportunities for student help hours (in person or via email) outside of lecture and regular office hours for multiple classes like thermodynamics, kinetics, and 170”



Prof. Ralph Napolitano was awarded the MA Ductility Award

Technical Programming (cont.)

MA-ASM Materials Camp



20 students from schools from Ames/Des Moines/Central-Iowan areas attending the 2025-26 ISU MA-ASM Materials Camp

This year's chapter is incredibly excited to announce the continuation of the 'Material Advantage – ASM Materials Camp' at Iowa State University. In collaboration with the Materials Science and Engineering Department, our chapter is motivated by increasing exposure, engagement, and education in materials science. After discussions with Victoria Brown at the ASM Materials Education Foundation, we are beginning the process of running these camps at least once an academic year for students in the Ames/Des Moines/Central-Iowan areas. This camp had volunteers from a large percentage of the ISU MSE department, seeing volunteers from many students, lab coordinators and managers, professors, and Ames Lab scientists.

20 students from Ames, Gilbert, and Nevada High School participated, guided by MSE student volunteers. Activities included hands on materials demos such as casting aluminum, heat treating steel, microstructure analysis of various metals and mechanical properties of rigid polymers, along with a tour of MAT E workspaces to show the day in the life of the typical MAT E student. These materials demos were chosen to give insight into key parts of material science and engineering as well as demonstrate all the activities students can expect to participate in as a material scientist and engineer, particularly at Iowa State University. Combining doing with learning, we wanted students to understand how certain processes go hand in hand with science to create new technologies, and how they can be involved in that process.

Over lunch, a 'meet and greet' took place where high school students were able to chat with current MAT E students to learn about life at ISU and the materials department. Afterwards, current MAT E students discussed their experiences in MSE, their motivations for joining the major, and their recommendations and opinions about opportunities in materials engineering. Additionally, future opportunities were discussed to showcase potential career opportunities in materials engineering, graduate school, and non-destructive testing. Finally, the students were taken next door to the Student Innovation Center to see the glass blowing studio at work. After a wonderful demonstration from Dr. Steve Martin and Gaffers Guild members, the students were given time to ask questions and admire the work. Several were impressed by the capabilities of the glassblowing studio and showed clear interest in participating in the future.

Student responses indicated very enthusiastic responses to the ISU Materials camp. Moreover, many students were fascinated by glass science in the glass demo, research opportunities in MSE, and the truly unique student experience provided by the MSE department at Iowa State University. All participating schools indicated their interest for long term participation, and the ISU Material Advantage chapter is excited to begin offering this opportunity each academic year. Efforts to plan for next semester's camp are already beginning and a new position has been created inside our chapter to personally oversee the camp's planning and execution.

Career Development

Material Advantage Trips

Each year, ISU Material Advantage attends the MS&T Annual Conference and the TMS Annual Conference as part of our career development initiative every year. The value of seeing what researchers are doing and presenting your own research is immense, and the experience should be given to as many people as possible. Additionally, the networking opportunities at these events are unparalleled, and we encourage as many students as possible to talk to other undergraduates, graduates, faculty, professors, and industry people as possible. Along with Conferences, we send four students who are involved in federally funded research and can talk about the importance of it to Washington DC to go to the Material Advantage Congressional Visits Days (CVD). All 3 of these conferences introduce great opportunities and insight into the careers of those who attend through networking, presentations, and even getting to see another part of the country. Many students have returned from these trips with stories, new friends, conversations with future colleagues, or even a job opportunity in the case of our Fall semester treasurer, Joshua Aardahl, who secured a co-op for SSAB while at MS&T.

MS&T 2025 Conference

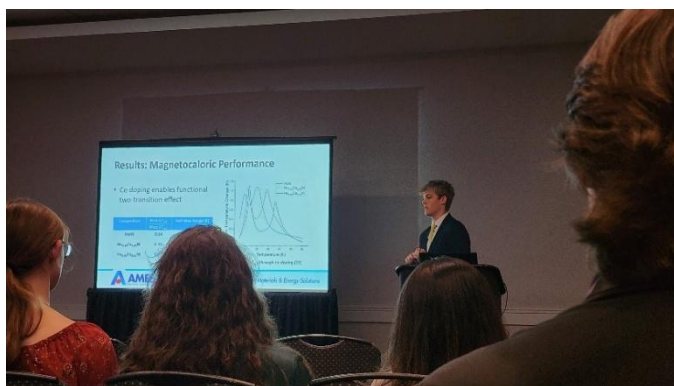
This year we sent 15 students to Columbus, Ohio for the annual Materials Science and Technology conference. MS&T is always a good bonding experience for the students that travel as undergo the long drive to Ohio. All class years are welcome to be a part of our travel to MS&T and this gives us the chance to engage with other members of our student body that we might not see as often because of different schedules, specializations, and years in college. The conference is as much a networking experience with fellow ISU students as it is with students from other schools.

At the conference, many professors and grad students from Iowa State were giving symposium talks, and our chapter was happy to attend as many of them as possible. Furthermore, many of our Material Advantage members also had chances to present whether through the symposium talks themselves or the speaking competition. Our chapter had 2 members, Casen Legreid and Maria Wagner, compete in this year's speaking competition. Casen Legreid took 4th place overall for his talk "Advancing Cu-Al-Mn-Ni Alloys for Cost-Effective Elastocloric Cooling". Both were grateful for the opportunity to not only present their research but also improve their speaking skills and meet with other students competing.

Chris Martin, a previous chair for the ISU MA chapter, also won the Alfred R Cooper Scholars Award and gave a symposium talk on the research he did at Iowa State. Many students from our chapter witnessed his talk on his research done while at ISU under Dr. Steve Martin. Moreover, many students also attended symposium talks from Dr. Pete Collins, Dr. Steve Martin, and their graduate students. Seeing how many graduate students get to present was inspiring, and greatly encouraged many students to pursue graduate school, and present their own research in the future.



ISU MA Group with Iver Anderson at MS&T 2025



Casen Legreid presenting at the MS&T 2025 Speaking Competition

Career Development (cont.)

TMS 2026 Conference

TMS 2026 is the annual meeting and exhibition for The Minerals, Metals & Materials Society and features symposium talks and competitions for students such as the Blade Smithing Competition and Materials Quiz Bowl. This year, we had 3 people, Azriel Carr and Casen Legreid, from our chapter attend the conference in San Diego, CA. We had 3 people, Azriel Carr, Casen Legreid, and Erin Cleary, a graduate student at ISU, compete in the Materials Bowl student competition, securing 2nd place. Casen and Azriel were very grateful that MA could give them the opportunity to attend and compete at the competition as they were both greatly interested in attending TMS from the start of the Spring semester. While there, they attended several symposium talks and a networking event with other students.



Azriel, Casen, and Erin at TMS Materials Quiz Bowl

CVD 2026

This year, we sent four students to Congressional Visit Days (CVD) in Washington, DC, from March 24th to March 28th. This trip was sponsored by our MA chapter, the ISU MSE department, ISU MSE faculty, and the ACerS Foundation through travel reimbursement. Students Dylan Jacks, Billie Alexander, Casen Legreid, and Arush Naik, and MA faculty member Dr. Patrick Johnson met with national House Representatives and Senators to advocate for funding of the physical sciences, specifically Materials Science. Our travelling students were from Iowa's neighboring states, so they met with members of Congress from Iowa, Wisconsin, Minnesota, and Kansas. Through their meetings with the people of Congress, they talked about the importance of materials research in advancing technology, sustainability, STEM education, and national security. These meetings not only allowed for the students to connect with lawmakers and support research, but gave the students valuable insight into the career of science policy and government. These experiences allowed them to give back to their chapter by advocating, but also taught them communication skills dealing with policy and government.



ISU MA CVD Delegation meeting with US Senator Amy Klobuchar to discuss the importance of science research funding

Congress Person	State	Legislative Chamber
Sharice Davids	Kansas	House
Chuck Grassley	Iowa	Senate
Randy Feenstra	Iowa	House
Amy Klobuchar	Minnesota	Senate
Tammy Baldwin	Wisconsin	Senate
Jerry Moran	Kansas	Senate

Career Development (cont.)

PowerFilm Plant Tour

On March 30th, 5 members of MA drove to the edge of Ames, Iowa, to visit a local solar panel company, PowerFilm. They make custom solar panels and specialize in thin-film, high-efficiency panels for specific applications. After reaching out with interest to tour, the president of the company was glad to have us out at the plant. He gave a tour of everything from their manufacturing of various solar cells, fabrication of thin film panels onto fabric via sewing, and examples of final installation including on semi-trucks or boats to name a few. Afterwards, a thorough Q&A session was held where students asked about everything from their toughest challenges to how the company started. Overall, it was another amazing example of where a career in materials science can lead to, and it was wonderful to see the material become a final product. Because of the proximity to the Iowa State University campus, the club hopes to continue doing this industry tour with bigger groups in the future.



Iowa State University MA chapter visits local PowerFilm plant

External Advisory Committee (EAC) Meeting

Every semester, the Iowa State University MSE department invites Materials Engineering alumni back to campus to give guidance on the industry at large, current research, and the MAT E program at ISU. Additionally, they invite students, particularly from the ISU Material Advantage chapter to give their thoughts on the program and how it could be improved. In both the Fall and Spring EAC Meeting, several club members attended the meeting with alumni from Northrop Grumman, Dow Chemical, John Deere, and more. One of the primary focuses of the meeting was outreach and encouraging incoming students to be the next generation of materials engineers. Many ideas were shared including more outreach to those within the college and the high school juniors who were starting to seriously consider their college and career of choice. The other focus is typically on improving hands on learning via curriculum labs and senior design projects. Some students find some of the labs to be lackluster compared to experience gained elsewhere through undergraduate research or industry internships and co-ops, which led to a brainstorming session to narrow down the classes that really needed improvement and how new ideas can be implemented. Overall, it is a great opportunity to connect engineers in training with alumni and share key ideas and experiences with one another.

Meeting With Dow Chemical Alum

Dow Chemical is an American multinational company and is considered one of the largest chemicals producers in the world. On April 22nd, an ISU alumni and current Dow Chemical engineer, Ryan Hall, met with members of ISU MA to discuss how he came to be at Dow Chemical and his time with the company. Unexpectedly, the meeting, with only 5 attendees, lasted a little over an hour with several topics being discussed including a day at Dow Chemical, how living near Houston is like, how to deal with challenges as a new engineer, trying to find the right place in a company, and many more. The students gained great insight into the company and got answers to many questions, even ones they did not think of asking.



Service

Materials Science Outreach/Education

The outreach team's main goals are to educate the community, discuss topics related to materials science engineering, and interest the future generation in STEM. We achieve that through fun and interactive demonstrations of material properties that cover properties of polymers, ceramics, metals, and electronic materials. Outreach also helps recruit members into the MA chapter at ISU. Our trained members volunteer at events around the Ames community, presenting at places ranging from local elementary schools and Zoos to official ISU events.

Popular demonstrations:

Happy Ball-Sad Ball: This demonstration consists of 2 small rubber balls, one crosslinked and one not. While they are made of the same material, they bounce very differently. We usually have 2 audience members try to bounce them and realize the large difference. We can then explain how in polymers, the processing and molecular structure is important in determining properties of materials.

Eddy Currents: This demonstration shows the effects of eddy currents, and how it slows down a magnet when dropped through a conductive tube. A copper and PVC pipe are given to 2 audience members, and after proving them that neither of the tubes are magnetic, and asking what they think will happen, they are asked to drop a strong magnet through each tube and catch it with the same hand. To their surprise, the magnet falls slower through the copper tube. We can then describe the effects of eddy currents and electromagnetic forces.



MA Heat Treatment Demo at the Student Innovation Center

Shape-memory: A fun and simple demonstration that shows the effects of shape memory wires. We have shape memory wires of many different shapes and thicknesses that we let people un the audience bend, and then with hot water or a flame torch, we revert the wire back to its original shape. We can then explain how shape memory wires are used in braces, actuators or for the elastocaloric effect for heat transfer.

Piezoelectricity: As part of our demo materials, we have a pair of light-up shoes. We took apart one of the shoes to reveal a small circuit with LEDs attached. We explain how the piezoelectric crystal within the circuit turns mechanical energy from hitting the ground translates into electric energy that causes the LEDs to light up.

While we have dozens of other demos, these give an idea of some of the demonstrations we do. We put a lot of effort into training our members to know how to teach each demonstration to each age group. From explaining it in very simple terms to elementary schoolers, to explaining the science behind each concept introduced by each demonstration to college level or parents. We believe that tailored education both helps us get our message across and excites all age groups about materials science and the possibilities of it but also helps our members understand the concepts and be able to explain them better in the future. Overall, reinforcing how important STEM education is and how impactful material science and engineering is our main goal.

Crosslinked vs Not Crosslinked Rubber Ball



MA Outreach Day at the Blank Park Zoo

Service (cont.)

Outlined below are a few highlighted outreach events that we have had the opportunity to be involved with.

ASM Materials Camp®–Teachers

Building upon the success of our student-focused Materials Camp initiative, Iowa State University was selected as a host site for the 2026 ASM Materials Camp®-Teachers program. Organized in partnership with the ASM Materials Education Foundation and the Iowa State University Department of Materials Science and Engineering, this nationally recognized professional development program brings middle school and high school STEM educators to campus for a week of hands-on materials science and engineering experiences. The camp introduces teachers to classroom-ready experiments, engineering career pathways, and modern materials technologies while providing continuing education opportunities and access to educational resources.

The ISU Material Advantage chapter played an important role in supporting recruitment, outreach, logistics, and promotion of the camp. Through this initiative, the chapter's impact extends well beyond university students and directly supports STEM educators who will influence hundreds, and ultimately thousands, of future students throughout their careers. While many Material Advantage chapters participate in outreach activities, relatively few have the opportunity to help host a national ASM educational program of this scale. The selection of Iowa State as a host site reflects the strong partnership between our chapter, the MSE department, Ames National Lab, and ASM International, while reinforcing our commitment to advancing materials science education at the local, regional, and national levels. The program is expected to serve approximately 20-30 STEM educators from Iowa and surrounding states.



Recruitment flyer for ASM Materials Camp–Teachers at MSE-ISU

Virtual reality for outreach and education possibilities

This year, our chapter expanded its outreach capabilities through the acquisition of a Meta Quest 3 virtual reality (VR) headset. While traditional STEM education often relies on static images and diagrams, immersive VR experiences allow students to interact directly with complex three-dimensional structures and datasets. This technology enables participants to visualize and explore materials science concepts in ways that are difficult to achieve in a traditional classroom setting, helping improve spatial reasoning, scientific understanding, and engagement with STEM topics.

A particularly exciting aspect of this effort is that several ISU Material Advantage students have been directly involved in the acquisition and analysis of the research datasets that will be used in the VR environment. Through research collaborations at Iowa State University, Ames National Laboratory, and NASA-supported projects, chapter members have participated in experiments at the Advanced Photon Source (APS) at Argonne National Laboratory, where high-resolution 3D synchrotron X-ray tomography was used to characterize solder materials processed under both terrestrial and microgravity conditions. These datasets provide a unique opportunity for students to move beyond traditional classroom learning by exploring real scientific data that they helped collect, analyze, and interpret, creating a direct connection between research, education, and outreach.



*(left image) 3D distribution of Pb rich dendrites and voids in solders, captured by MA members using synchrotron measurements at the Advanced Photon Source at Argonne National Laboratory.
(right image) Meta Quest 3 VR headset*

Engineering Clubfest:

At the Engineering Clubfest, ISU students are introduced to clubs focused on engineering and science. At this event, our members demonstrate the accomplishments, activity, and community of the club to students interested in joining MA. We make sure we highlight how the club is open to all majors, not just those in MSE. Starting the year off strong with recruitment allows us to build a better base of members, which furthers helps with recruitment and the longevity of the club. Additionally, hosting social, professional development, and outreach events allows us to have more to share with potential recruits, showing them that they can have a large impact.



*Engineering Clubfest 2024
Table Presentation*

Friday After Class (FAC) @ Pizza Pit



*Celebration of Chapter of Excellence
Award at FAC*

One of the largest social events throughout the year is Friday After Class (FAC). ISU MA hosts FAC every other week at Pizza Pit in Ames. It is an opportunity for students, faculty, and staff to wind down and enjoy delicious pizza after a long week of classes. With roughly 15 people showing up, ranging from freshman to seniors and faculty, FAC @ Pizza Pit is a great way to socialize with people in the club and in the department. The atmosphere is much different from the classroom, which allows for a wider range of conversation than the current homework assignment or upcoming midterm.

Meeker Elementary STEAM Night

For the past couple of years our Material Advantage chapter has gone to Meeker Elementary's STEAM night. The main purpose of the event is to introduce young students to the fascinating fields of science, technology, engineering, arts and mathematics by showcasing demonstrations of attending relevant organizations. Our chapter sees this as a beneficial opportunity to encourage the young students of today to pursue higher education and inform parents about materials engineering at Iowa State and become future engineers. This year our chapter sent two students along to Meeker, utilizing our outreach demonstrations above to show how material properties are a part of everyday things that elementary school students might see in their daily lives, and to inform parents about the value of materials engineering as a major that their children can choose to participate and thrive in.

Biomedical Engineering (BME) Outreach

With Biomedical Engineering implemented as a new major on the ISU campus in recent years, ISU MA wanted to reach out to the BME students and determine if there was interest in them joining Material Advantage. To do this, we sent a few of our members to one of the intro BME classes to give an overview of MA, our upcoming events, and the activities we frequently host such as outreach and social events. A similar presentation was also given in another Biomedical class by one of our vice chairs, but to upperclassmen BME instead. Finally, many of our members have shared classes with BME students and our faculty advisor, Siddhartha Pathak, has told his Biomaterials class of the chapter on multiple occasions. Through outreach to students in BME, we hope to foster interdepartmental relationships and host activities together in the future. In the later meetings in the semester, there were a few BME students who did turn out, and we hope to further increase this number in the semesters to come due to the large overlap in interests and companies between the majors.

Social Activities

QuickyKwiz and Kaleidoquiz

QuickyKwiz (QK) and Kaleidoquiz (KQ) are trivia competitions hosted by Iowa State's student-run radio station, 88.5 KURE. Each competition is primarily focused on answering puzzling questions asked every 6 minutes that must be answered over the phone. Additionally, there are frequent events including challenges, photo compilations, scavenger hunts, and more. Our MA chapter participated in both events this year and won third in QK and second in KQ.



Part of the 2026 MA Kaleidoquiz team!



Photo Challenge #6 - Alchemy

QuickyKwiz is a 6-hour contest held in the fall semester and took place November 8th, 2025. After winning both QK & KQ in last school year, we returned strong this year with a full team of 10 members. In addition to winning, the goal was to introduce new students to the event to rebuild the excitement for the event in the department and gain experience for KQ. Our team had an exciting time participating, and we placed third this time, facing some tough competition this year.

Kaleidoquiz is a 26-hour contest held in the spring semester and took place April 17th-18th, 2026. This event challenges students to work together and determine the answers to obscure trivia facts and references by surfing the internet and participating in a variety of other activities on campus. Our chapter was able to get 2nd place this year in the competition, which was unfortunate for us as reigning champs. It was an incredibly close competition, as the final scores were 4990 for us and 5022 for the winning team, and we hope to have the club keep going for gold in the future. We had a peak of 28 total participants on our MA KQ team, including a graduate student and a recent Iowa State MSE graduate. Not only did at least a third of the undergraduates in the department participate, but most of us spent a large part of our day participating. KQ was particularly excellent for building connections between students in the department. Many first-year students were very engaged in the competition and have been more involved in social activities since. KQ was the perfect event for us to participate in as it built excellent student connections, built strong teamwork, and most importantly, we had a ton of fun!



A portion of our second place '26 KQ team!

Social Activities (cont.)

E-Week Activities

Engineers' Week (E-Week) is a national celebration in the United States dedicated to promoting the importance of engineering and recognizing the contributions of engineers to society. With a push from our class engagement chairs, we had a great turnout at the events held all week. During E-week our club had official teams that participated in events in the evenings. One of these events was a trivia contest that featured a wide variety of topics from object measurement to TV show quotes to flags of various countries. Our trivia team consisted of 8 of our MA members and while we did not win, we had a great time!



MA team from E-Week Trivia 2025

Trivia Nights (October General meeting and more)

During the past 2 semesters, general trivia nights hosted by the Chair Dylan Jacks became a regular event. They typically lasted an hour and saw either ~10 participants or ~20 participants depending on whether it was a general meeting or a normal trivia night. At the October general meeting, we hosted a trivia night to encourage people to come out and get involved before we had employers, alumni, or faculty present at future meetings. This allowed the underclassmen and people who had not participated in MA before to get their bearings and meet people on and off the executive team. It was an enjoyable event during the first uncertain weeks of the academic year where students were able to take their minds off the wave of responsibility and upcoming exams and have some fun with their friends. Some of the topics in trivia were past Kaleidoquiz questions, the Price is Right, guess the song and artist, and general topics like science and history.

Future trivia nights served much of the same purpose as the first one. There were nearly 10 of these events in total throughout the semester, and hopefully they continue to happen with the next executive team. The trivia nights were great at drawing in the underclassmen and keeping them at events, which can be a hard thing to do. Additionally, many good laughs were had as well as some occasional arguments over answers, but it was all fun the same.



October General Meeting with 1st-4th years

The Hoover Hall MSE Student Room

While many social events are great for creating a good community, a place to work, study, and hang out together daily is just as, if not more important. The student room is a computer lab on the 3rd floor of the ISU MSE building Hoover Hall where at least half the undergraduates come every single week to do the normal school things. In addition, though, many find the student room a great place to ask for advice on homework, collaborate on projects, share opinions on classes, play a board or card game, or just relax after a long day of classes. Material Advantage has its own portion of the student room where it advertises upcoming events, demos from the chapter, opportunities through the national Material Advantage organization, and a list of recent graduates and where they are headed. The student room is truly the heart of the community and MA does its best to support it. The community would truly not be the same without it.

Subject: Faculty Advisor Letter of Support for the 2025-26 MA Chapter of Excellence award

To the Award Committee members,

I am writing to strongly recommend the Iowa State University Material Advantage (ISU MA) chapter for the 2025-26 Chapter of Excellence award. I have been the faculty advisor for the ISU-MA chapter since Fall 2020, and before that I was the faculty advisor for University of Nevada, Reno MA chapter (my former university). As such, my experience with MA chapters in two university systems gives me a unique perspective to evaluate ISU-MA's application. ISU MA has now earned the Chapter of Excellence recognition for 4(!) consecutive years. Over this period, I have witnessed a culture of continuous improvement, leadership, and service that distinguishes it from most student organizations and MA chapters nationwide.

A major strength of ISU's MA chapter is the exceptional commitment of its members. ISU MA conducted regular monthly general meetings, geared towards career development and service, as well as monthly officer-only meetings to address chapter management and technical programming. As a result, there were over 35 ISU MA-sponsored events throughout the academic year, which were attended and led by ~80+ active members. These activities spanned technical programming, professional development, outreach, advocacy, and community engagement. Many of these events had unique themes. For example, our MA chapter has participated in the QuikyKwiz (QK) and Kaleidoquiz (KQ) trivia competitions hosted by ISU's student-run radio station, 88.5 KURE, and secured a top 3 finish in both for the last 3 years.

The chapter has also been highly active in student career development. The chapter members have attended multiple international conferences, including MS&T 2025 and TMS 2026 (they won *2nd place in the TMS Materials Bowl* competition). Additionally, our MA members had a successful visit to Washington DC for the Congressional Visit Day (CVD) in March 2026, where they met with members of Congress from Iowa, and the neighboring states of Wisconsin, Minnesota, and Nebraska. The chapter has become one of the primary avenues through which students connect classroom learning with professional practice.

The ISU-MA chapter is directly integrated into the MSE department's outreach efforts, now impacting the entire materials education pipeline from K-12 students, to UG/graduate students, STEM teachers, to policymakers through Congressional Visits Day. Chapter members conducted approximately 20 outreach programs reaching hundreds of students across Iowa. I would particularly like to mention the **Materials Camp** organized by the ISU-MA chapter as a prime example of how our MA students consistently go above and beyond their designated duties and expectations. Building on the success of last year's inaugural event, our MA chapter hosted another hands-on materials camp experience for ~30 local high school students, providing laboratory demonstrations, interactions with current students and faculty, and exposure to materials science careers. Additionally, ASM International has selected ISU-MSE as the host site for the **2026 ASM Materials Camp® for Teachers**. This will extend the chapter's impact well beyond university students and directly supports STEM educators who will influence hundreds-to-thousands of future students. Such camps can be very impactful for increasing the visibility of our small department among the high school students. Although highly interdisciplinary, MSE is often colloquially referred to as the 'discovery discipline'. That is to say most incoming students 'discover' MSE only after arriving on campus. Initiatives such as the Materials Camp and the ASM Materials Camp®-Teachers are prime drivers in solving such issues.

I meet with dozens of prospective UG students over the course of a given year and in every single one of those meetings I point to MA as evidence of the welcoming, supportive, and collegial environment in our department. I have been involved in multiple MA chapters as faculty advisor (both at ISU and at previously at University of Nevada, Reno), and I can confidently say that this chapter stands out not only for its level of activity, but also for its consistency, innovation, and measurable impact. In my professional judgment, the ISU MA chapter operates at a level comparable to, or exceeding, the very best chapters in the MA program nationally. The ISU MA chapter has my strongest possible recommendation for the Chapter of Excellence award - and I believe it is highly competitive for the Most Outstanding Chapter distinction.

Sincerely,

Siddhartha Pathak 05-31-2026

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