

The Michigan Materials Society

Which serves as the Material Advantage chapter at the University of Michigan, Ann Arbor.

Material Advantage Chapter of Excellence Application
Summer 2019 Annual Report



Prepared by the MMS 2019-2020 Board

Overview of the Michigan Materials Society

The Michigan Materials Society, also known as MMS, is an entirely student run organization composed of primarily Materials Science Engineering undergraduate students. MMS works towards providing undergraduate Materials Science Engineering (MSE) students with opportunities and events. MMS follows many goals under this overarching idea, including goals such as providing professional development, education, and community to all MSE students. In addition to holding weekly luncheons, MMS organizes social events, outreach programs, and career development workshops. In addition, MMS serves as the connection between the MSE Department, external organizations such as Material Advantage and SPE, and the undergraduate students. MMS requests funding and grants from the University and from external organizations in order to host speakers as well as to send students to conferences. Whether through student mixers or outreach collaborations, MMS also provides students with further opportunities as a result of our prior connections with companies and professional societies. The MMS is at its core run by a team of 12 members on an executive board. The members are democratically elected by the undergraduate MSE students, and meet on a biweekly basis to ensure accountability and activity on all ends. This application document will outline MMS's activity over the 2018-2019 school year.



The 2018-2019 MMS Executive Board and 2019-2020 MMS Executive Board

Programming

The Michigan Materials Society (MMS), which serves as the Material Advantage Chapter for the University of Michigan, hosts a variety of events over the course of the year. MMS events are open to all MSE undergraduate students, as well as any other students interested in Materials Science. Our most regular service is a weekly luncheon hosted entirely by our student chapter. We host a variety of speakers and seminars at these hour-long luncheons, especially industry connections from companies such as BASF, Ford, 3M, and many more. Over the course of the prior year, we held close to 15 luncheons with industry speakers. The remainder of these luncheons were held as workshops, such as a graduate panel, a summer opportunities panel, and career fair preparation workshop. This luncheon series has been active for at least 5 years, although the specific speakers are chosen on a yearly basis by our MMS board. The attendance at our luncheons varies, but typically lies around 50-60 people per luncheon. The goal of these luncheons is to introduce our members to the large range of jobs and opportunities Materials Engineers have.

Aside from our luncheon series, we host an assortment of social events, such as annual picnics in the Fall and Winter terms as well as occasional events throughout the year, averaging to approximately once a month. Some events include a bowling event, a “Pizza and Pour” event at a local metal casting facility, an ice cream social, and more, which will be discussed in the Social Activities section of this application. The purpose of these events is to build a sense of community within the MSE community beyond just the classroom. These events allow students of all years to meet each other and share advice and community.

Outreach events are also of great value to the community and will be discussed in great detail in the Service section of this application. Especially because MSE is a less-known field, MMS has made efforts towards introducing students of all ages to MSE. Our audience includes as young as K12 students to freshmen at U-M who may not have previously been exposed to MSE. On campus, we hold outreach events each semester to introduce freshmen to our fields. We also conduct collaborations with organizations such as NSBE (National Society of Black Engineers) and FEMMES (Women + Excelling More in Math, Engineering, and the Sciences) to reach to younger students. Off-campus, we have collaborated with SPE Detroit to reach further, although these were not our initiation.

In addition to our regularly scheduled events, MMS hosts one-schedule events such as resume workshops and luncheons such as with the startup Lionano. For this reason, the MMS Executive Board holds biweekly meetings to ensure that all events run smoothly. Larger events held by MMS include the MSE Annual Career Fair, which was initiated two years ago by prior MMS Board members. Today, the MSE Career Fair is hosted as a collaboration with the MSE department at U-M. Off-campus, MMS obtains funding from the MSE department and the College of Engineering to send students to conferences. Just this past year, MMS sent students to TMS 2019, ANTEC 2019, the DC Congressional Visit Day, and SPE AUTO Epcon 2019. These experiences allow our students to be exposed to recent innovations and research done by The MSE Department assisted us with details of TMS 2019, and SPE Detroit helped set us offset the expenses of ANTEC 2019. Aside from that, MMS students organized each of the mentioned trips primarily by ourselves, including travel, programming, and reimbursements, and will be discussed further in the Career Development section.

The MMS applied for and won the 2019 Elaine Harden Award, which is given to the student organization which best exemplifies dedicated leadership and service to the community. We are proud of this honor, as it shows the great strides we have made especially over the 2018-2019 school year. We are thankful to not only the entire MMS Executive Board, but to those in the U-M MSE Department who have provided us support, funding, and guidance throughout the whole year, especially our advisor Dr. Ashwin Shahani.



MMS receiving the Elaine Harden Award at the 2019 Honors Brunch

Career Development

This past year we hosted a number of career development events for our members. We hosted our first ever resume critique in which seniors and professors within the department worked with underclassmen to polish their resumes for the upcoming career fair and to work on their pitches to different companies. This event allowed our members to learn new skills as well as refine old ones when it came to recruitment, a skill that we usually do not receive much practice in. We also held professional panels throughout the year. Occasionally, instead of a company luncheon in which a professional involved in industry visits, we would host a panel discussion that dealt with professional development, graduate school, summer options, etcetera. These panels allowed our students to understand what skills they would need to be successful in the field that they wanted to move into following graduation.

For one of these panels, Professor Taub, former head of research at GM, spoke about what skills are paramount in industry that we can easily develop as undergraduates. These panels have been helpful for those in our department who plan to go into industry as well as those who are going on to graduate school because they are able to teach us how to become better engineers. Another one of the panels that we held was about graduate school. This panel included current masters and PhD students at Michigan that spoke about their experiences in both undergrad, graduate school, and occasionally even industry. This panel is really important for a lot of our members that are on the fence about whether or not they want to continue on to graduate school after their time at Michigan. During this discussion, students are able to see if the lifestyle of graduate school fits their own, whether the opportunities that they are eventually seeking require another degree, and even just learn more about the application process. In the future, we plan on collaborating with other engineering student organizations to go on plant tours with our members.

MMS has also hosted several mixers in collaboration with ASM International and AFS in the Fall and Winter terms respectively. These were not initiated by MMS, but MMS advertised both events. We also sent students to multiple outreach events outside of the University, primarily with SPE Detroit.

This year, we also sent students to The Minerals, Metals & Materials Society (TMS) conference for the first time. We received funding to send 6 students to participate in the conference for three days in San Antonio, TX. Students participated in Materials Bowl, an event in which students from different schools compete by testing their knowledge of materials and materials and TMS history in

a quiz bowl style competition. Attendees were also student monitors for different panels hosted during the conference. Students were able to choose which panels they attended, and these panels were an excellent opportunity for students to learn more about material applications, concepts, or properties that aren't necessarily covered by MSE courses on campus. This conference was also a great opportunity for students to interact with professionals in fields that they are interested in, and work on networking skills and pitches. One student was even offered a job from the connections she made through the conference. MMS was the primary organizer of the event, and planned food, housing, and transportation related matters.



Six MMS undergraduate students at TMS 2019 in San Antonio, Texas

Following this conference, MMS has attended other conferences, such as ANTEC 2019, where 7 MMS students assisted in SPE Detroit's "Social Media Wall" throughout the week. At the DC Congressional Visit Day, two students met with senators to discuss funding towards STEM, especially at the University level. Most recently at SPE AUTO Epcon 2019, students participated as the Student Moderators for seminar tracks throughout the day, ensuring that questions are addressed and all talks run on time. In addition, students listened to keynote speakers and learned about issues facing the automotive industry and their suppliers. These conferences are just the start of MMS's involvement in professional societies, and we plan to capitalize on this momentum.



One of our MMS board members at ANTEC 2019 in Detroit, Michigan

Service

MMS has put a significant amount of focus and effort into outreach programs. For starters, we have hosted outreach events aimed at undeclared underclassmen to spur interest in MSE. During these events, we ran demonstrations to show the material properties of ceramics, metals, and polymers. These events were held in public places such as campus atriums so that anyone could come up and learn more about MSE, and we often interacted with underclassmen, as well as university staff and visitors. Around 60 people interact with our table during these demonstrations.

We have also hosted some K-12 outreach events. One such event was a collaborations with the Women + Excelling More in Math, Engineering, and the Sciences (FEMMES) capstone group. Once in the fall and winter semesters, MMS works with FEMMES to teach 60 children in grades 3-5 about MSE related concepts. Children participate in hands on events to learn more about different materials and their properties. At our most recent event on March 16, children cross-linked glue with borax, along with a few other ingredients, and made bouncy balls while learning about polymers. They also learned about phase changes with a nitinol demonstration, and got a brief introduction to thermodynamics and crystal formation by making liquid nitrogen ice cream, which they then got to eat.

Another event aimed towards K-12 students was a collaboration between MMS and the National Society of Black Engineers (NSBE) on March 15. This event was intended to teach STEM to about 80 students grades 9-12 from the Metro Detroit area. We provided hands-on demonstrations for students, such as heating, quenching, and tempering bobby pins to learn about metals and their properties and processing techniques. Students also broke CDs with furniture polish to learn about cross-linking, and skewered balloons with wooden skewers to learn about polymer properties. We also gave a brief presentation to teach students about the MSE major, discussing overall properties and practical uses of each material type.

On April 16, we attended SpringFest and ran a few more hands-on demonstrations for any passerby to participate in. SpringFest is an annual festival held on the campus Diag that has live music, student performances, food trucks, art installations, and more. SpringFest also encourages student organizations to come and participate. This year, we set up a table to inform students of all ages about MSE and teach the general audience science with fun demonstrations. We used the bouncy ball, CD, and balloon skewer demos, and interacted with students, non-students, and children. Overall, we interacted with about 200 people at this event.



The materials science demo station at Springfest 2019

In addition to our outreach, we have worked with MSE graduate students in community service. In November, we worked with the Graduate Students Council (GSC) to set up a food drive with Food Gatherer's, an organization that distributes food the less fortunate. We made the event a competition between MSE graduate students, undergraduate students, and faculty, collecting non-perishables and toiletries. We also sent a few students to the Food Gatherers Ann Arbor location to help in the packaging of food that would be distributed to shelters and meal centers the next day.



MSE undergraduate and undergraduate students at Food Gatherers

Off-campus, MMS has participated in outreach programs initiated by SPE Detroit, such as the STEM Festival at Delta College in October, and the Southeast Michigan Science and Engineering Festival at Schoolcraft College. These opportunities reach hundreds of students in the K-8 range off-campus where our own outreach does not typically extend. In addition, these opportunities allow our students to build connections with professionals in the area.

Social Activities

MMS hosts a series of social events throughout the year to spur a sense of community among undergraduates. In addition, some social events are targeted towards the whole MSE department, with the goal of building connections between undergraduates, graduate students, and faculty. Our social events are held approximately once a month.

Our annual events are the MSE picnics, held once in September and once in April. The whole department is invited, to join for food and games. The Fall picnic has attendance of around 150 people, while the Spring picnic has an attendance of around 100. Aside from these, MMS organizes Bar Crawls on a semesterly basis as well, inviting the whole department. Other events depend on the season and the student body's interest. The department is asked which events they would be most interested in, and the social chair will work on planning these events in association with the rest of the executive board.



Pictures from the MSE Fall Picnic

MMS held an Ice Cream Social at the end of September, inviting not only MSE students, but also also any freshmen who reported interest in MSE, with an attendance of around 40 people. In addition to providing free ice cream, we held various Materials demos, including creating optical fibers out of jolly ranchers. This provided the chance for interested freshmen to meet current MSE students and

learn more about Materials science before they make their decision regarding classes. A Pumpkin Painting event was held in October for undergraduate MSE students. Small pumpkins were purchased for students to paint, and around 15-20 students attended. A Pre-finals breakfast was held shortly before the end of the Fall term for undergraduate students to socialize and study together. Approximately 25 students attended.

In the Winter term, MMS held new social events, such as laser tag. Carpooling was arranged for approximately 15 undergraduate students of varying class levels to head to Zap Zone, where they played games on Laser Tag and socialized. A “Pizza n Pour” event was also held in February, where 25 students were brought to a local castings facility. In addition to being taught the fundamentals of casting, students were able to create and keep their own small molds and castings. A bowling night as held in the same style of laser tag night, with food provided. Finally, as previously mentioned, the year was finished out with a spring picnic and bar crawl. As a whole, these regular social events helped to create a welcoming and active atmosphere within the MSE community, allowing students to meet others who they might not otherwise meet through classes.



MMS at Joyworks Studio for the “Pizza ‘n’ Pour” event

Chapter Management

Our elections are held annually in February during a weekly luncheon, where twelve members are democratically elected to the board. All MSE undergraduates are encouraged to participate in elections, no matter the class level. In addition to the standard President, Vice President, Secretary, and Treasurers, we also elect a Social Chair, Junior Representative, External Affairs Officer, two Undergraduate Committee (UGC) Representatives, and two Undergraduate Engineering Student Advisory Board (UESAB) Members. The executive board meetings on a biweekly basis to discuss club organization and events, and meeting minutes are recorded by the Secretary.

The President and Vice President work together to oversee all operations within MMS, as well as to organize luncheons and reach out to companies regarding events such as the MSE Career Fair. The Secretary manages internal meetings and organization, as well as the MSE Website, which has been linked in our application and is at <https://mms.engin.umich.edu>. The Treasurers work closely with the President and Vice President to organize weekly luncheons, as well as to apply for grants and to manage catering and finances of each event.

Outside of that core group, the Social Chair plans and sets up all social events and informs members of these events via email. The Junior Representative is responsible for recruiting new MSE students by advertising to common entry MSE classes, as well as organizing demo events as previously mentioned in the Service section. Our External Affairs Officer is the main contact between MMS and other professional societies; he or she works closely with faculty members and external contacts to organize student trips to materials conferences, as well as mixers and outreach outside of the University. Our two UGC Representatives are the link between MSE students and the UGC, which seeks to improve the MSE curriculum. Finally, the UESAB Members connect MSE students to the UESAB, a committee designed to improve the engineering undergraduate experience.

Our finances are kept in an SOAS (Student Organization Account Services) account, which holds the money through UM. Our money may only be pulled through reimbursements, and said reimbursements must be filed by the president, vice-president, or treasurers. This account allows for easy payment of campus services through use of our “shortcode,” and allows for smooth transition of executive boards from year to year. A records system of our events is kept in a MMS google drive, and is updated throughout the year by the whole board as events occur.

Our club has recently attained the status of an SSO (sponsored student organization) and provides us a number of benefits. Among these benefits, being an SSO allows any donations to our club to be tax deductible, which will help us gather further support from companies in the future. Our club has been financed by a number of different grants from U-M College of Engineering as well as the Materials Science Department at U-M, and grants are applied for on a semesterly basis. The grant money that we received from our department was paramount in enabling us to attend the TMS conference this spring. Additionally, we receive funding from SPE Detroit as a result of our involvement in outreach and at plastics conferences mentioned previously.

To fund out weekly luncheons, we work with companies to determine an amount that they are comfortable with spending and then find catering options that fit within that price range. To avoid payment complications, we typically ask that companies call the restaurant that we order catering from and pay over the phone a few days prior to the event. The typical attendance at MMS luncheons varies from 40-60 people, and as a result we generally consider the active size of MMS to approximate 60 people.

To ensure continuity of excellence in our operations, we use a transition document system, which each prior executive board will modify before they leave. These documents provide the incoming executive board with the information required for their positions; they ensure a smooth transition from year to year, with no lost information. Furthermore, holding our elections in February allows us to transition before scheduled luncheons end for the year. At this time, the current board can begin to train the incoming board before they graduate or switch positions.

In the Service section, we discuss our outreach events aimed at recruiting undeclared engineering students to the department. Once a student has declared, they receive a welcome email from the Secretary; this is their introduction to both MMS and the MSE department. The email invites the student to our weekly luncheons and describes everything MMS has to offer. From that point onward, the student receives weekly emails about luncheons and other events.

All members of MMS can find helpful resources on our website at <https://mms.engin.umich.edu/>. The website provides a calendar of events, materials-specific job postings, career advice from both students and professionals, suggestions for elective courses, and scholarship information.

Additionally, it is a place where undeclared or newly declared students can go to learn what MMS is all about and the opportunities provided. In the future, job openings and scholarships will be regularly updated on the website.

Summary

The Michigan Materials Society holds a number of goals through its consistent luncheons, regular social and professional development events, and connections with external organizations. MMS is organized by a 12-member executive board who meet on a biweekly basis and organize events with assistance with help from the MSE department and especially our advisor Dr. Ashwin Shahani.

Our goal of providing community is reached through social events such as our MMS Fall and Spring picnics, which invite undergraduates, graduates, and faculty alike, as well as our “Pizza ‘n’ Pour” event which mixes socialization with the excitement of Materials Science.

MMS provides professional development through numerous workshops, on graduate school, career fair preparation, and much more. On top of that, MMS, through the department and our professional society connections, offers opportunities for outreach and networking off campus, as well as funding towards attendance of conferences such as TMS and ANTEC, with hopes of attending MS&T and more this upcoming year.

Service and outreach are attained both on- and off-campus, with collaborations with many students groups such as FEMMES and NSBE as well as with SPE Detroit. These opportunities allow us to share knowledge of Materials Science and Engineering with other students who may not otherwise learn about MSE.

Especially over the 2018-2019 school year, MMS’s involvement in external organizations and in outreach programs has improved tremendously. Our acceptance of the 2019 Elaine Harden Award is proof of this progress, and we intend to keep up this momentum through the 2019-2020 year and beyond.

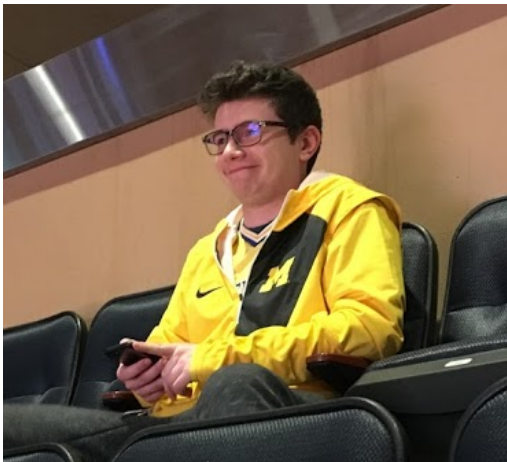
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External Affairs Officer



Cole Schneider
Undergrad Committee Representative



Andra Chen
Undergrad Committee Representative



Olga Kim
Undergrad Engineering Student
Advisory Board



Nabeel Khan
Undergrad Engineering Student
Advisory Board



May 28, 2019

To Whom It May Concern:

I am writing this letter to provide my strongest support to the Michigan Materials Society (MMS). I have served as the faculty advisor of MMS since Fall (September) 2017 to present day. In this capacity, I meet with the MMS leadership on a monthly basis to provide some direction on their future endeavors, from outreach to professional development; I also serve as a faculty liaison, representing the interests of MMS at any/all faculty meetings.

I can think of no other chapter that is "more outstanding" than ours. The students have demonstrated their commitment to organizing a wide range of service activities, professional development seminars, and chapter-sponsored field trips, including one to TMS 2019 in San Antonio, TX. Despite being a relatively new chapter, we have shown great promise and I am excited to see what the students are able to accomplish in the next school year.

Sincerely,

(Ashwin J. Shahani)