



The Student Program for Materials Science and Engineering

STUDENT CHAPTERS OF EXCELLENCE PROGRAM



SOUTH DAKOTA MINES[®]

An engineering, science and technology university

Application for Chapter of Excellence 2021-2022

**South Dakota School of Mines and Technology Material Advantage
Chapter**

Prepared by: The 2021-2022 Chapter Officers

Faculty Advisor: Dr. Michael West

Table of Contents:

Photos of 2021-2022 Officers	3
Chapter Overview	5
Calendar of Events	6
Chapter Management	7
Technical Programming	10
Career Development	12
Service	14
Social Activities	17
Faculty advisor Support letter	20

Chapter Officers:



Jennifer Johnson
President

"Material Advantage has given me the ability to service my school and community, compete academically, network with industry professionals, and build leadership skills."



Liam Stack
Vice- President

"Being a part of Material Advantage this year was extremely satisfying as I was able to help bring life back into a dwindling chapter. I am excited for what next year has to bring!"



Nicholas Stogdill
Secretary

"Material Advantage has been a summary of all my academic and extracurricular experiences. I've been able to learn from communities, professors, and peers in a variety of settings about the range that metallurgy can provide."



Sommer Scott
Treasurer

"I got involved with Material Advantage to explore different industry options for my future career and meet like-minded students. I really enjoyed hearing from industry professionals and professors present on their careers and research studies."



Nicholas D'Attilio
Graduate Representative

"The scholarship and conference opportunities that Material Advantage has provided to me have been invaluable to my time in school. I look forward to continuing my membership in the societies that Material Advantage has given me access to once I begin my professional career."

Chapter Overview:

Here at South Dakota School of Mines and Technology the Material Advantage chapter was all about kickstarting and growth. Due to Covid-19 and complete turnover of officer team it was a learning experience and a chance to rejuvenate the club and turn it into a larger resource for the students.

During this year we were able to dramatically increase the amount of chapter meetings from once a semester to over twice a month with several different professional development, technical programming, social activities, take advantage of different grant opportunities, and even send teams to TMS for the 2022 annual conference.

The chapter has almost doubled in regular attendance for meetings and events. The national memberships have also increased greatly with a majority of the freshman class getting a national membership.

The chapter has around 20 active members attending regular meetings with around 45 students that are registered with the club. This is a terrific number considering the Metallurgical engineering major has roughly 80 students.

During this school year the chapter has been able to take advantage of many of the grants offered for Material Advantage, like the travel grants to TMS, travel reimbursements to the chapter, AIST pizza grant, and more. Students of our school have also been very successful in obtaining scholarships through the material advantage parent societies. Material advantage sent two teams to 2022 Annual conference, Bladesmithing who received second place and Material Bowl team who received third place.



Both Blade Smithing and Material Bowl teams at TMS Annual Conference



Jennifer Johnson Presenting to a MET class about advantages of Material Advantage memberships

Calendar of Events:

Fall 2021 Semester

June 7-10th- ASM Materials Camp

July- Junior Bladesmithing competition

August 27th- Fall organizational fair for freshman recruitment

September 1st- First general meeting with resume review

September 15th- General meeting with Logan Aluminum guest speaker

September 13th- Nevada Gold Mines Info Session

October 2nd- Girl Scout STEM exposure outreach

October 7th- Technical Workshop Blacksmithing

October 8th- Guest speaker Teneil Dollarhide

October 20th- General meeting and Guest speaker Dr. Jon Kellar on material research to reduce the Illicit market

October 20th- First Panchero event

November 3rd- General meeting and Trivia night

November 17th-Technical Workshop Stained Glass

November 18th- General meeting and Guest speaker Dr. Bharat Jasthi

December 3th- Friday Blacksmithing and Grill for Fall Semester

Spring 2022 Semester

January 28th- General meeting and Tami Nelson Resume Workshop

February 9th- AIST Pizza party Scholarship review and general meeting

February 15th- SDSMT Engineer Day

February 27th thru March 3rd- TMS 150th Annual Conference

March 14th thru 16th Boy Scout Metalworking Merit Badge

March 17th thru 18th- Women in Science conference

April 1st- Friday Blacksmithing and Grill for spring Semester

April 20th- Guest speaker Jordan Larson ATI

April 27th- Zay Jeffries birthday cake and bowling

May 14th- Ellsworth Air Show

Chapter Management:

Election Process and Officer Recruitment:

During the first meeting in April, elections are announced, and the roles explained to give member the opportunity to ask current officers questions about the roles and to consider if they want to run. It is then sent out in a chapter email and professors are asked to bring this up during the first part of class. If available officers are asked to go into the classes and present for five minutes about the different roles and responsibilities. Then, another email is sent out a week later asking for self-nominations or nominations by other students for the different roles. This must include a short description on why they should be elected. At the last meeting in April students that have been nominated are asked to speak for a minute and explain why they should be elected. Then an email is sent out with a survey of all the nominees including their descriptions and given a few days to votes. The results are then announced over email.

Finances:

Finances largely fall on the Vice president and the treasurer for Student Organization Appropriations Program (SOAP) and other fundraising activities. SOAP is the allocation of school funds for the difference chapters decided by student senate. These funds can be used for travel, outreach, different campus events, and more. There is a budget that is created and then a budget presentation given to the finance senate committee. The President oversees information gathering on different grant opportunities and applying for them. The treasure manages planning Pancharo fundraisers. Pancharo's is a local restaurant that allows the chapter to receive 20% of the night's income between the hours of 4-8 O'clock of a designated night. Company donations also make up a large portion of earnings which is facilitated by the Faculty Advisor. The president, in part with the other officers direct the spending of budgets and allocation of money for the chapter.

Record Keeping:

The president is in charge of creating an attendance sheet for each of the meetings. The secretary conducts email updates to the chapter members and recording minutes of the chapter events and officer meetings. These minutes are then placed into an Office Teams which all the officers can access.

Website Management:

The school has a website called “Mines Link” where all the student organization are supposed to post different chapter meetings and activities in one place so that every student can have access. Each club has their own page where officer contact information can be found as well as the specific event, minutes, and By-laws. It is the job of the President and the Secretary to keep this page updated.

Recruitment of Members:

Members are recruited through several different avenues. At the beginning of the year there is a Fall Student organization fair which all the student organizations set up booths in the Quad for two days and collect student emails and give summaries of the chapter. Then, the Organization officer team presents for about five minutes within the first two weeks of the semester to each MET class, particularly the 1st year Introduction to Metallurgical Engineering (MET 110) class. This is very successful and allows for a large recruitment of new members.

The freshman also have a First-Year mentor, an upperclassmen from within the degree, who encourages them to attend. Chapter events are also presented in class by professors, and they give heavy encouragement to attend. This is a very key part of recruitment, when professors encourage students to attend it shows that there is a great importance to Material Advantage then just some other club. Posters are also displayed around the department building reminding about events. Different fun social events are done throughout the year giving potential members the chance to make friends within the club and interact with students outside of their year. This helps to keep our engagement high which it currently is very high.

There is a large dedication of members to this chapter and large amount of people interested in its success. One example of this, beside large member turnout, is through the number of members who ran for an officer position. There were over 13 members that ran for the five positions open. This is a vast improvement compared to the current officer’s election cycle which only had about 6 memes running for the five positions.

Excellence from year to year:

Currently our chapter is in the middle of shaping and increasing operations to maintain the level of excellence for years to come. This year was all about growth and learning the different vast opportunities offered with Material Advantage for both the members and officer team. This past calendar year the officer team was made up of all new officers, three of which

being juniors and continuing on for the next academic year. This will allow for the traditions created this year to not be lost.

This year the chapter will also be implementing a leader mentorship/shadowing program for younger members, freshman and sophomores, to give the opportunity to gain leadership experiences and integrate the different program opportunities for the years to come. This will be very important to allow everything built to stay in place and to have an even greater expansion.

Officer team as Stated in Chapter By-laws:

President (Chair):

The President of this Chapter has the following duties: preside over all Chapter meetings and activities, keep advisors informed of all activities, write and submit annual reports, introduce guest lecturers, and appoint committees.

Vice President (Vice Chair):

The Vice-President shall assume the following duties: accounting and purchasing for all activities, SOAP proposal/presentation, attend SOAP workshops, provide financial statements at monthly meetings, spearhead fundraising efforts, and perform duties in the absence of the President.

Secretary:

The Secretary shall perform the following duties: take meeting minutes and make available for absent members, compile and distribute all notices and e-mails, maintain current membership list, organize fall membership drive to include applications and dues, and write/distribute letters of appreciation.

Treasurer:

The treasure shall preform the following duties: Assisting the Vice-President in all financial based activities, schedule and be contact person for fundraising events, and developing new ways to raise money with the President.

Graduate Liaison:

The Graduate Liaison shall perform the following duties: promote and coordinate activities with graduate students, serve as a liaison between undergraduate and graduate students, and serve as the Chapter recruitment coordinator.

Technical Programming:

Dr. Bharat Jasthi- SDSMT Department head for the Materials Engineering Graduate Program:

Dr. Jasthi presented on his different research topics with the department and for different laboratories. He also talked about graduate school for SDSMT as the Department head for the Materials Engineering and Science Master's and Doctoral degree at the school. This gave students the opportunity to think about different options then industry.



Technical Workshop- Blacksmithing

Material Advantage members hosted a technical workshop for 20 first-year, first-generation SD Mines students and first year Material Advantage members. Upperclassmen Material Advantage students helped teach training course on how to blacksmith a hook and talked about the influence of forging on the structure and properties of steel.

Teneil Dollarhide- The Equity Engineering Group Inc. (E2G)

Teneil Dollarhide is a Metallurgical Engineer for E2G Company and presentation what she does for her career and the different things she learned in school that furthered her career.





Technical Workshop- Stained Glass

Material Advantage members worked in conjunction with the arts in STEM “STEAM” club to host a stained-glass workshop for 20 students in the SD Mines Women in Science and Engineering (WiSE) and Material Advantage members. Fellow members led activities to create a stained-glass piece and talked about the science involved with glass formulation, soldering, and other concepts. The workshop was also attended by middle and high school students from Rapid City schools.

Jordan Larson- ATI

Material Advantage chapter organized a technical seminar for MA members and students from the department. The invited speaker was Mr. Jordan Larson, Director of Business Development for ATI Specialty Materials. Mr. Larson talked about challenges in processing titanium and the titanium industry. Mr. Larson also talked about challenges in critical metals related to supply chain issues. This technical seminar was attended by 20 students.



Career Development:

Nevada Gold Mines- Info Session

Material Advantage worked in conjunction with the Society for Mining, Metallurgy, and Exploration (SME) chapter to organize and host an info session for Nevada Gold Mines in conjunction with the SD Mines Fall Career Fair. The seminar focused on careers involving extractive metallurgy in the mining field. The event was attended by nearly 50 SD Mines students.



Logan Aluminum- Info Session

Shortly after the Fall Career Fair Logan Aluminum presented via zoom to Material Advantage members and guests about their company and career opportunities. There was also a Q&A where students could ask more about Logan Aluminum processing and what recruiters look for on resumes and interviews.



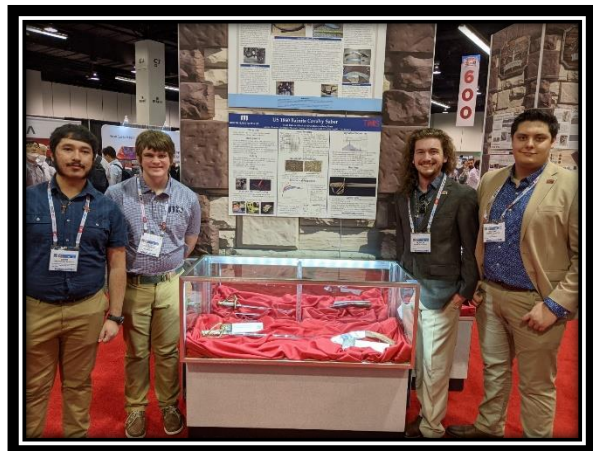
Tami Nelson- Resume Workshop

Material Advantage members hosted a resume review and interviewing basics workshop for 20 undergraduate metallurgical engineering students. The Material Advantage chapter organized this event and invited a technical guest expert SD Mines alum Tami Nelson. Ms. Nelson had a distinguished career which included Managing Director for Undergrad Mining and Corporate Employment Manager for Caterpillar. Material Advantage members reviewed and gave feedback on resumes for students with a specific focus on 1st year students. She also did an interactive talk on interview tips and tricks. This was a huge success, strategically planned right before Spring career fair to aid in members landing internships and fulltime positions.



TMS 150th Annual Conference 2022

The Material Advantage Chapter in conjunction with the department supported 8 students to attend the 2022 TMS Conference. Students networked with professionals and helped with and attended conference sessions. They also participated in the Materials Bowl taking 3rd place. MA members also lead the SD Mines TMS Bladesmithing Team that won 2nd place at the conference.



Service:

ASM Materials Camp

Member of the Material Advantage chapter assisted with the annual ASM Materials camp for high school students on the SD Mines campus. This was a free camp that hosted 20 students from 7 different states. Material Advantage members led activities that engaged students through hands-on activities including metal casting, welding, and blacksmithing.



Junior Bladesmithing competition

Material Advantage members helped pilot a new nationwide competition for high school students called the Junior Bladesmithing Championship hosted by SD Mines Department of Materials and Metallurgical Engineering and sponsored by the university's industrial partner, Nucor Steel. The championship is modeled after the TMS Bladesmithing competition and challenges high school students to use traditional blacksmithing and bladesmithing methods of hand hammering or trip hammer forging to produce a blade. Students are also tasked to write a technical report detailing the science behind their work. The competition encourages high school students to work with local blacksmiths or experts in their own communities to build hands-on metalworking skills while engaging in a learning process around the science of metallurgy. Entries were judged by Material Advantage members along with SD Mines alumni.



Girl Scout STEM Exposure Day

Material Advantage presented two different booths for STEM exposure, one was making stain glass pendants, the other was different material demos, like shape memory alloys and ductile to brittle transitions for rubber. Both very interactive and entertained the roughly 150 young Girl Scouts who stopped by!



SDSMT Engineer Day

Material Advantage members led materials testing activities for 100 middle school students from the region. Members also talked to middle-school students about what metallurgical engineers do and shared their internship experiences with them.

Metalworking Merit Badge

Material Advantage members led activities to fulfill the metalworking merit badge for a group of 30 scouts from the region as part of the SD Mines “Merit Badge Midway” activities. The merit badge requirements consisted of understanding the history and application of metals, metalworking terminology and structure-property-processing relationships in metalworking. The students also led hands-on metal forging, rolling, and materials testing.





Women in Science conference

Material Advantage students helped with the SD Mines Women in Science conference. This conference is attended by over 500 middle-school girls from the region. Members helped lead hands-on workshops in high-temperature polymer clay. They also engaged students to talk about what Materials and Metallurgical Engineering is and educated them on careers involving materials.

Ellsworth Air Show

Material Advantage members worked with university admissions to have a table at the Ellsworth Air Force Base airshow. The main theme to accompany the airshow was a STEM focus. Students conducted forging demonstrations and educated the public about metallurgical engineering program and the relationship to the aerospace field. This event is attended by thousands of members of the public from South Dakota and surrounding states.



Social Activities:

Trivia Night!

How well do you know your material trivia? This night we put it to the test. In a team-oriented trivia contest, points were assigned to different questions and the team with the highest total points one gift cards to a local coffee shop. There were no more than four on a team with no more than one graduate student each. Lots of food and lots of fun!



Panchero's Nights!

Twice a semester after a Material Advantage meeting, officers would carpool members to Panchero for a fundraiser get together. Those days Material Advantage would get 20% of the proceeds from 4-8 o'clock. Too much fun that pictures were forgotten! This was a great time for students to hangout and just enjoy everyone's company with good food. It was also a good time for students to interact with each other outside of their grade levels.

AIST Pizza and Scholarship hangout!

Thanks to the AIST pizza grant the club was able to provide pizza for a social gathering and talk about different opportunities not only offered with AIST but all of the professional societies and scholarships! With a few scholarship tips and tricks also thrown in there.



Friday Grill outs and Blacksmithing

Once a semester Material advantage along with the Blacksmithing club would host a grill out and blacksmithing event. The open-forge day is a day when students can work on personal projects and also train interested new students while providing food for many students.



Zay Jeffries Bowling Birthday Party!

Zay Jeffries is one of the most notable alumni from SDSM&T and a metallurgist! So this year we decided to celebrate his birthday with all sorts of desserts like a cookie cake and even cheesecake! Then followed bowling two hours of free bowling for members. This was a great way to end the school year and have a stress-free couple of hours before finals week.



Faculty Advisor Letter of Support:



SOUTH DAKOTA MINES™
An engineering, science and technology university

Department of Materials & Metallurgical
Engineering

May 25, 2022

Subject: Letter of support for South Dakota School of Mines and Technology Chapter of Excellence
Hello Chapter of Excellence Review Committee,

As the current faculty advisor for the South Dakota School of Mines and Technology Material Advantage Chapter, I want to give my enthusiastic support for the chapter to be considered for recognition as a Chapter of Excellence.

The MA Chapter has long been the most important student professional organization in our Department and has been a cornerstone of student recruitment and retention. In the past year, the MA Chapter student leadership team and members have done an incredible job to impact our campus and community. Highlights of chapter activities are many, and just a few examples are given below in the areas of Chapter Operations, Professional Development, and Service.

Chapter Operations – The leadership team did an excellent job to increase student membership and involvement by recruiting new members and establishing more frequent meetings and new social events. These activities were critical to the retention and engagement of students after the challenges of COVID. The team also leveraged partnerships with student clubs on campus to impact a larger audience. The team identified and participated in new fund-raising activities that will impact the Chapter long-term.

Professional Development – The MA Chapter organized and hosted many events that especially focused on careers and industry. The chapter hosted scholarship workshops, resume and interviewing workshops, and industrial speaker events that educated students on materials and metallurgical careers and technical challenges within industry. The chapter also directly supported a number of students to attend the TMS Conference and led the TMS Bladesmithing team which placed 2nd in the international competition.

Service – The MA Chapter has always supported service and outreach to expose young students to STEM. However, this last year, I was amazed by the level of outreach activities that impacted literally hundreds of K-12 students in South Dakota and surrounding states. Examples include leading the ASM Summer Camp and leading hands-on workshops related to materials and metals as part of SD Mines Engineer Day and the South Dakota Mines Women in Science conference events for middle-school students. Finally, students helped establish a novel Junior Bladesmithing Competition that encourages students from all over the nation to learn about structure, processing, and performance of metals.

Please do not hesitate to contact me with any questions regarding my recommendation.

Sincerely,

A handwritten signature in black ink, appearing to read 'mwest'.

Michael K. West, Michael.West@sdsmt.edu, Department Head and Associate Professor
Materials and Metallurgical Engineering, South Dakota School of Mines and Technology