COLORADO SCHOOL OF MINES
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Chapter of Excellence Application

2017-2018

Colorado School of Mines Material Advantage Chapter

CSMMAC

Submitted to ASM International on June 1st, 2018

Prepared by Reid Winchester, Chair 2017-2018

Faculty Advisors: Dr. Kip Findley, Dr. Gerald Bourne, Dr. Geoff Brennecka

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The George S. Ansell Department of Metallurgical and Materials Engineering
1500 Illinois Street, Golden, Colorado 80401-1887

To whom it may concern:

We are writing a very positive letter of support on behalf of the Colorado School of Mines Material Advantage Chapter (CSMMAC) for the Chapter of Excellence Program. CSMMAC has been integral to the Metallurgical and Materials Engineering (MME) department and Colorado School of Mines activities for several years. They continued to operate at a high level over this past year through numerous and innovative programming and outreach activities.

Outreach has long been a strength of CSMMAC, and this year was no exception with several campus and external outreach activities that involved many CSMMAC members. The MME department often utilizes CSMMAC to help with Mines activities for prospective and freshman students considering different degree paths. CSMMAC has a well-developed set of demonstrations for these types of events, and the members convey both their knowledge and excitement about the field when providing tours for students and their families. These activities have been important for our department in advertising to students who often have little awareness of materials engineering as a field. CSMMAC also expanded their other outreach activities to encompass more diversity-focused events with the American Indian Science and Engineering Society and Girls Lead the Way. They also participated in an Olympic oriented event in February with a new outreach activity they developed to show principles of electrochemistry by creating a "silver medal" (with zinc plating).

CSMMAC also organized an impressive list of programming activities including hosting speakers from diverse fields, providing the students members valuable exposure to multiple materials engineering fields and career possibilities. The speakers represented areas including 3D printing, steel, ceramics, polymers, aerospace, oil and gas, and mining. CSMMAC also developed new activities this year including a professional development workshop ahead of the campus career day, a jewelry casting day, and an event called soda-lime Sunday where students could use the new glass-blowing facility. These are all excellent opportunities for students to gain exposure to materials regardless of their degree program at Mines. Additionally, the chapter continued to show strong participation the various competitions and activities sponsored by ACerS, AIST, ASM, and TMS. One highlight this year was winning the

Materials Bowl at TMS 2018! The group is also actively involved with the local ASM Rocky Mountain Chapter and again organized the annual Barrett Award Lecture, delivered this year by Tresa Pollock.

The Material Advantage program provides a good opportunity for leadership development. CSMMAC has developed a strong infrastructure for managing their various activities, which allows the student leaders to grow in their positions. These positions are often the first time students have taken on a significant leadership role, and there is substantial learning that takes place. The leadership group this year was particularly receptive to guidance regarding the chapter leadership and the development of their own skills, which was reflected in the evolution of CSMMAC activities over the course of the year. They have also instituted knowledge management practices to share their experiences to help next year's leadership hit the ground running.

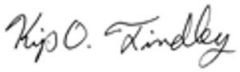
The MME department considers CSMMAC to be core to its activities and continues to utilize CSMMAC for outreach as described previously and also for input on our curriculum and courses as well as evaluation of teaching assistants and faculty for awards. We are extremely fortunate that we can tell incoming freshman and sophomores they have the opportunity to get involved in a chapter annually considered amongst the best in the world. This year is no exception! We are very proud of this group! Please let us know if you have any further questions.

Sincerely,

CSMMAC Co-Advisors

Jerry Bourne

Geoff Brennecka



Kip Findley

Chapter Overview

The past two semesters of the 2017-2018 school year were filled with a wealth of great events for the members of the Colorado School of Mines Material Advantage Chapter (CSMMAC) as well as the surrounding community with which CSMMAC is involved. The executive board sent 29 students to the MS&T & TMS conferences and sixteen social events, including jewelry casting, were held. For outreach, eleven events in the community and on campus were held, totaling more than 150 volunteer hours. Sixteen speakers, covering a wide array of topics ranging from additive manufacturing to extractive metallurgy, shared their experiences in industry and academia.

This year, CSMMAC held a logo design competition in order to create a symbol to represent the club for years to come. The winning logo is featured on the front of this report and will be used when promoting CSMMAC. This logo provides value to CSMMAC as it will be a longstanding symbol for the chapter and will be recognizable for both Mines students and external partners. This logo embodies CSMMAC as it incorporates Colorado School of Mines, metallurgical concepts, and Colorado state pride into its design.

Similar to previous years, the executive team was dedicated to making CSMMAC stand out on campus and developed creative events. Improvements were made to the structure and internal workings of CSMMAC to benefit the incoming executive members.

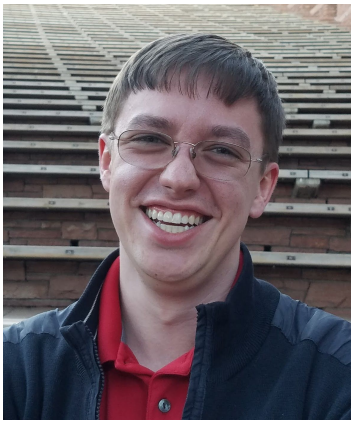
2017-2018 Officers

Reid Winchester, Chair

Nick Lipski, Vice Chair

Makenzie Parimuha, Treasurer

John Copley, Secretary

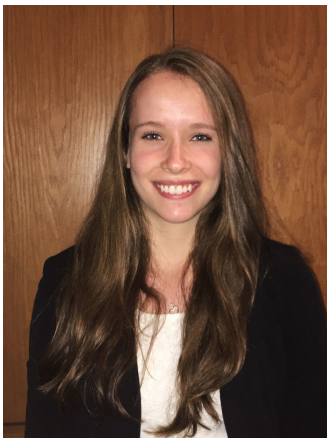


Alec Saville, Outreach Chair

Melissa Thrun, Outreach Chair

Ryan Steves, Social Chair

MC Rosprim, Social Chair



Kelsey Cannon, Junior Class Rep

Taj Mitchell, Sophomore Class Rep

Programming

CSMMAC holds weekly meetings to introduce various subjects to our members. Academic and industry speakers share their career path, current work, and advice during evening presentations. Speakers cover a wide range of topics, but all are relatable to the students and provide great insight into possible paths students can take upon graduation.

Student and Departmental Speakers

Colorado School of Mines, Dr. Chester Van Tyne:

Dr. Van Tyne attended the first meeting of the fall semester. He welcomed the students back to school and briefly discussed the department. His presentation however was focused on his hobby of bow-tying , which the students were able to participate in during the meeting. It provided a good opportunity for new members of the society and department to meet veterans.

Colorado School of Mines, Dr. Ryan O'Hayre:

Dr. Ryan O'Hayre, a professor at CSM, CSM alumnus, and author of our kinetics textbook, spoke about his research into batteries and PV solar cells. He spoke about their application in industry as well as their manufacturing process. Finally, he spoke about opportunities for undergraduates within his research group and his path from an undergraduate at CSM to a CSM professor.

Colorado School of Mines, Dr. Ivar Reimanis:

Dr. Ivar Reimanis is a professor at CSM and researches in ceramics. His main focus is in transparent spinel and its application for armor. However, Dr. Reimanis spoke to CSMMAC about his adventure climbing Denali and bringing the ACerS flag to the top. He spoke about his training, gear, and the challenges of this huge undertaking while teaching at CSM.

Colorado School of Mines, Megan Leppert:

Megan Leppert, a PhD candidate at CSM, previously worked for AFRL (Air Force Research Laboratories) and taught at the Air Force Academy in Colorado Springs. She presented on some of her work with AFRL and her current research into producing radomes and other " radar invisible" materials.

Colorado School of Mines, Dr. Rennie Kaunda:

Dr. Rennie Kaunda is a professor in the Mining department at CSM. His current work involves the use of microwaves to soften rocks for applications in drilling in the

mining industry. He worked all around the world before coming to Mines to teach. He shared life experiences from working in different cultures and industries and the lessons he learned from these experiences.

Colorado School of Mines, Bridget Wetzel:
Bridget Wetzel, is an EPICS 271 professor at CSM. She previously worked for Alcoa, Sundyne, and Anheuser-Busch. Much of her experience is in metallurgical engineering, but also includes project management and mechanical engineering. She spoke about all the different career paths she took, gave advice to the students, and touched on her family and personal life.

Industry and Invited Speakers

Nucor Steel, Mr. Steven Gage:
Steven Gage, a melt shop metallurgist at Nucor Steel Memphis, presented on Nucor Steel and its role in the global steel industry. He discussed the company's history and the steelmaking process used for its products. He also presented on the specific roles of metallurgists within the company. This presentation occurred during the week of career fair, and as such, provided and excellent networking opportunity.

Chevron, Ms. Nika Moyer:
Nika Moyer, a metallurgist at Chevron and CSM alumna, gave a presentation on the role of a metallurgical and materials engineer in the oil and gas industry. She provided information on the career opportunities available with Chevron and showed a portion of the presentation prepared by the metallurgical intern that worked for her the previous summer. This presentation occurred during the week of career fair, and as such, provided and excellent networking opportunity.

Blount International, Dr. Mark Taylor:
Dr. Mark Taylor, an engineer in the metallurgical laboratory at the headquarters of Blount International and CSM alumnus, gave a presentation to CSMMAC about the role of a metallurgical laboratory for a global manufacturing company. He gave an introduction to the design and metallurgy of various saw chains. Blount International recruits metallurgical engineers and interns from CSM extensively , and they are a member of the ASPPRC, making this a unique networking opportunity for CSMMAC members.

Newmont Mining Corporation, Mr. Zach Zantell:
Zach Zantell, a senior metallurgist at Newmont and CSM alum, gave a presentation on the role of a metallurgical and materials engineer in the mining industry. He provided an overview of the company and of career opportunities with Newmont. He also discussed his current work at Newmont’s global R&D facility, the Malozemoff Technical Facility, and his decision to return to Mines to pursue his master’s degree.

PlasticWorks, Dr. Ted Hutton:
Dr. Ted Hutton is a materials engineer that works specifically with plastics. He presented on his career as first a metallurgist, and then as a plastics engineer. He focused on his current work with plastics welding and the various applications of it. This subject held particular interest for students involved with the CWJCR, whose primary focus is metals, not plastics.

Elementum 3D, Dr. Jacob Nuechterlein:
Dr. Jacob Nuechterlein, the founder/president of Elementum 3D and CSM alumn, gave a presentation on the role of a metallurgical and materials engineer in the additive manufacturing industry. He provided information into new advances in the industry and opportunities for additive manufacturing in other industries. As an entrepreneur, he also spoke about the challenges and obstacles of starting his own business and what drove him to start his own company. Over 90 people from campus came to listen to this talk.

Arkema, Nick Walker:
Nick Walker, a sales representative at Arkema, gave a presentation on the role of an engineer in sales. He provided an overview of the company and an insight into the life of a sales representative working in the fluoropolymers division of Arkema. He discussed his specific role in the company and the uses of Kynar®, Arkema's trade name for PVDF resin.

Coorstek, Anthony Linenberger:
Anthony Linenberger, a Mines alum and engineer at the Coorstek facility in Grand Junction, CO, gave a presentation about tape casting ceramics and its application for body armor. He also spoke about his transition from academia into the workforce and some tips for success when starting your first job.

Aerix Industries, Rich Pallidino:
Rich Pallidino, the president of Aerix Industries, presented on foaming and lightweight cellular concrete. He detailed several of Aerix Industries' projects, specifically one on the Eisenhower Tunnel in Colorado. He also brought several examples and demonstrated their uses as well as explained the science behind concrete. He concluded with lessons he learned over his 30+ years working in industry.

Honeywell, Anthony Martinez:
Anthony Martinez, a Mines alum and engineer at Honeywell, presented on his work in Honeywell's material testing laboratory. He brought example turbine blades, additively manufactured parts, and other failed and unfailed parts from jet engines. He spoke about the testing that the parts undergo as well as his role in the laboratory. He concluded with the lessons he learned entering industry and how Mines helped him to make that transition.

Career Development

Members interested in stepping beyond the classroom were presented with excellent opportunities to develop themselves professionally and learn about career choices available after graduation.

Industrial Tours

Honeywell: This year, nine CSMMAC members were able to take a tour led by Mines alumna Abby Miklas. She exposed the tour group to the jet engine assembly line, materials test laboratory, additive manufacturing laboratory, and other areas that she and her team work on in the aerospace department of Honeywell. This occured during TMS 2018 in Arizona.

Finkl Steel: Several members of CSMMAC had an opportunity to see the production of steel at Finkl. They learned about the scrap piles used for alloying, vacuum/inert degassing equipment for ultra low carbon steels, as well as the quench of steel plate after heat treatment in furnaces. Students were also able to see forging on a hot press.

Spring Career Day Preparation

Lin Sherman, Assistant Director of the Career Center at CSM, has more than a decade helping students land internships and jobs with top employers in many industries. This year, she gave a talk several days before the Spring Career Fair. Her topics included what you should and should not put on your resume, how to make a good impression in 30 seconds, as well as how to choose between multiple offers.

Technical Meetings

MS&T '17: CSMMAC sent seventeen members to Pittsburgh to network with students, professors, and industry representatives, and to attend a variety of short courses and lectures. Students also competed in several competitions while there. Students' travel was partially funded by CSM and donations from ArcelorMittal and Newmont. Students and faculty attended the AIST Student Reception, and were able to network with industry and society representatives.

TMS 2018: Twelve students traveled to TMS in Arizona. While there, students attended lectures, networking events, and competed in the Materials Bowl. One student received a Co-op as a direct byproduct of networking, another presented for the progress of the 2019 bladesmithing competition, and a student also presented at the Light Metals Division Luncheon for a scholarship he received from TMS.

Congressional Visit Days: CSMMAC sent five members (two graduate students and three undergraduates) to CVD this year. While there, the students met with Cory Gardner (CO-Sen), Ed Perlmutter (CO-Rep) and Steve Linton-Smith (Staffer-Coffman), and advocated for increased support and funding for STEM. This came at a pivotal time during appropriation season on the hill. Students shared how government funding of STEM through NSF, DOE, etc., had impacted their educations. The students also provided useful information to their congressmen to help in their research and push for increased STEM funding.

Student Competitions

Domes Day: Nick Lipski, Reid Winchester, and Alec Saville spent the Fall semester creating a dome that was 3D extrusion printed. The team focused on weight management and cost of production. This was a big step forward for CSM's dome team.

Ceramic Disk Golf Throw: Jordan Palka spearheaded the disk golf competition this year. He created a disk out of PZT which he hoped would withstand impact either into the chain basket or less preferably, the ground. He made it to the third round.

Materials Bowl: While at TMS 2018, the Mines Materials bowl team, comprised primarily of CSMMAC members, won the Materials Bowl. The team, consisting of graduate and undergraduate students, studied together and with faculty prior to the competition. After a close call in the first round, the team from Mines made a strong showing the rest of the competition. With this win, the team from Mines has now won over half the Materials Bowl competitions.

ASM Rocky Mountain Chapter

CSMMAC is an active part of the ASM Rocky Mountain Chapter. Two students held positions on the executive board this year and provided insight on student activities to improve students' meeting attendance. Reid Winchester served as the student representative to the ASM chapter as part of his duties as CSMMAC Chair, and Connor Rietma was the communications chair, responsible for the creation and distribution of the chapter's monthly newsletters.

Barrett Award Night: The ASM Rocky Mountain Chapter of holds an award ceremony annually to honor outstanding contributions to the field of material science. This year, Tresa Pollock, a professor at University of California, Santa Barbara, was presented the award. After receiving the award she presented on her work developing new femtosecond laser-aided 3-D tomography techniques and models for Integrated Computational Materials Engineering.

Geology Museum Tour: This year the Rocky Mtn. Chapter had an opportunity to take a field trip to the geology museum at Mines. While there, members looked at the vast collection of eye catching minerals on display during a guided tour.

ASM Meeting Attendance: Faculty, graduate and undergraduate students attended the monthly ASM meetings. Students are encouraged to attend by the chapter's generous dinner subsidies which add a social element to the night's technical talk.

Design Competition

Through the ASM Materials Education Foundation, a 2017 senior design team entered their project on Majuba Hill Copper and Silver Extraction: Flotation and Agitated Leach vs. Conventional Heap Leach. Using a flotation process to extract silver and agitated leach process afterwards to extract copper resulted in an NPV of 400 million dollars.

Mentorship Program

Continued from Spring 2017, the "Chat with MME" program partnered upperclassmen with underclassmen either in or interested in the Metallurgical and Materials Engineering (MME) program at Mines. Upperclassmen provided insight and recommendations about classes, professors, and anything related to MME. This increased underclassman participation in CSMMAC resulting in several sophomores and freshman running for positions on the executive board.

TMS Bladesmithing

This year was a non competition year for the bladesmithing team. The bladesmithing team hosted three open forge workshops with an average turn out of eight students and two professors this year. At these workshops, everyone practiced making coat hooks and other introductory forging projects.

Service

This year CSMMAC participated in an abundance of outreach activities, volunteering over 150 hours as a chapter. Through the events that were hosted, students were able to interface with others in the community and generate interest in STEM, material science and metallurgy.

Campus Activities

Celebration of Mines - 8/25/17:

A beginning of the school year event, showcasing and celebrating the numerous organizations and clubs at Colorado School of Mines. CSMMAC continually has a booth at this event, showcasing what Metallurgical and Materials Engineering is as a major. Our club also educates students and community members about our organization, demonstrates several applications/examples of Materials Engineering, and talks about career prospects and personal experiences/internships at the event. For students interested in MME or CSMMAC, an email sign up is also collected at this event for future communications throughout the semester.

Preview Mines - 9/23/17 & 10/28/17:

Prospective Mines students, normally in the latter years of high school, come to Mines campus to see first hand the CSM campus and find out more about potential majors at the school. CSMMAC always assists the MME department with this event, providing volunteers for department tours and answering student and family questions about Mines and college life in general. This is also another great way to raise awareness of what Materials Engineering is and also to give back to the school for its continued support of CSMMAC.

CASA Degree Exploration Fair - 10/19/17:

Another annual event, the CASA Degree Exploration Fair invites all majors on campus to showcase aspects of their disciplines for current freshman to explore. CSMMAC ran the MME booth for this event, demonstrating many examples of Materials Engineering, explaining career and job prospects of the major, the dynamics of the MME department as a whole, and answered any questions posed by undeclared students.

Going for “Gold” Campus Event - 2/23/18:

In partnership with Mines Activity Council, CSMMAC held a demo during a Winter Olympic watching party. In line with the theme, CSMMAC volunteers brought copper plates that could be zinc plated using electrochemistry to create a “silver” medal, or this could be heated up to allow the zinc to diffuse into the copper creating brass or a “gold” medal. This was a fun way to teach students about metallurgy and give them a memento from the event.

Discover Mines - 2/24/18 and 3/17/18:

Very similar to the previously discussed Preview Mines, here accepted Mines students are given tours and demonstrations of campus and department buildings. CSMMAC members again act as tour guides answering any questions students or families may have while also showcasing the MME department and CSMMAC.

Community Outreach

American Indian Science and Engineering Society - 9/20/17:

A large event encouraging American Indians to pursue careers in science and engineering. CSMMAC hosted a demonstration booth, illustrating applications of Materials Engineering and also raising awareness of both CSMMAC and CSM at the event.

K-12 Outreach

Mitchell Elementary Math and Science Night - 9/28/17:

Mitchell Elementary annually puts on an evening focused around math and science for elementary students and their families. CSMMAC this year volunteered at the event to showcase basic examples of Materials Engineering and also raise awareness of CSMMAC among the community, along with educating the future generations of engineers about what engineering can do for the world.

Shelton Elementary School Math and Science Night - 11/2/17:

Much like Mitchell Elementary, Shelton Elementary also annually puts on an evening focused around math and science for elementary students and their families. CSMMAC volunteered at the event to showcase basic examples of Materials Engineering and also raise awareness of CSMMAC among the community, along

with educating the future generations of engineers about what engineering can do for the world.

Girls Lead the Way - 2/10/18

A campus wide outreach event, inviting female high school students from across the Colorado area to explore STEM engineering careers at Mines. CSMMAC gave a tour and completed demonstrations for students interested in the MME department, along with answering questions about Mines and college life in general.

Prospective Student Tours of Hill Hall

High school seniors considering several majors at Mines had an opportunity to visit Hill Hall, the MME department building. During these tours, professors and students conducted demos, fielded questions posed by incoming students, and conducted tours around the building including stops at the foundry and research labs.

Social Activities

Students had a chance to destress from school and homework during the semester by attending one of the many events put on by the social chairs.

Breakfast Club and Dead Day Breakfasts:
During the fall semester, CSMMAC provided breakfast for students on the first Friday of every month. This allowed students to socialize and destress before class. During finals week, CSMMAC spoiled the students with breakfast burritos in addition to the usual muffins, fruit, and beverages.

Jewelry Casting:
Jewelry casting, a new CSMMAC social event this year, ran during both the fall and spring semesters. Dr. King, the foundry director, spoke to students about the history of jewelry casting and the necessary steps to achieve a beautiful piece of jewelry. To the right, students can be seen making their wax jewelry trees, the first step in the process.

Halloween Costume Contest & Movie Night:
During the week of Halloween, CSMMAC members celebrated by dressing up in various costumes and watching a themed movie. Some even dressed up as their favorite professor.

Fall Barbeque:
At the beginning of the fall semester, CSMMAC held a barbeque for the campus to promote CSMMAC on campus. Officers were there to answer questions about CSMMAC and to explain the benefits of joining the society. About 100 students were served burgers, hotdogs, and vegetarian options with 40 of the students being from outside the department.

Ski-SMMAC:
During the spring semester, a group of eight CSMMAC members went to Keystone, a nearby ski resort, for a day of skiing and snowboarding. This provided an opportunity for members to build stronger connections outside of school.

Skate-SMMAC:

Back by popular demand, skate-SMMAC was held on both a rollerblading rink (fall semester) and on ice (spring semester). This event fostered relationships between club members and professors outside of the academic setting and gave students a great opportunity to destress during the week by skating (and falling) with their professors.

Cardboard Boat Race:
Every spring during the campus wide event E-days, a cardboard boat race is held on Clear Creek running through downtown Golden. This year CSMMAC decided to make a whale designed boat to go along with the theme. The boat had the ambitious goal of making it down the river with six occupants, twice the requirement, which turned out to be its downfall in the end.

Spring Party:
This year's spring party to celebrate the graduating seniors was held at Sherpa House in Golden. A buffet was provided by the restaurant for all attendees while they socialized with their fellow graduating MME students, non-graduating students, and professors. Post dinner a small ceremony was held while a few professors presented senior awards and congratulated the senior class on their great achievement.

Soda-Lime Sunday:
Working together with Keramos, students made their own paperweight with customizable colors and details. They were able to take these home the following day after the glass was tempered. It was a great opportunity for students to get hands on experience for the first time with molten glass and learn more about the new glass shop.

Etiquette Dinner:
Keramos and CSMMAC organized an etiquette dinner which provided some helpful pointers for how to behave in interviews and similarly formal settings in a relaxed and entertaining atmosphere. Participants were served 5 courses of formally-presented fast food accompanied by guidelines and examples of how to (and how not to) conduct oneself.

Chapter Management

The unique events that were put on by this year's executive board would not have been possible if not for the organizational structure in place. Throughout the year, the CSMMAC board communicated effectively to ensure things ran smoothly.

Recruitment Efforts

To increase involvement during the 2017-2018 school year, CSMMAC members participated in Celebration of Mines. Many of the unique demos that our outreach performs were present and crowds of people stopped to watch Prince Rupert's drops shatter into millions of pieces or steel transform from a ductile to brittle state when quenched. In total, 67 people sign up to receive emails about events in the future. In addition to having a strong recruitment at the beginning of the year, class reps as well as some of the other executive members made announcements about meetings and other happenings in introductory materials courses for freshmen and sophomores, as well as classes for juniors and seniors in the materials department.

Bylaws Overview

Bylaw Revisions: The meeting to review bylaws and suggest changes is a very important meeting that is always held in late April. This year, class representatives were added to the committees which incorporates another layer of involvement of younger faces into the chapter who can reach out to students in their grade.

Dues: During the Fall and Spring semesters, dues are collected by the Secretary and Treasurer. Members also have the opportunity to pay for both semesters at once if they would like. Dues are $10 per semester, but $15 if paid all at once. This money is used to offset the cost of food at meetings and pay for T-shirts at the end of the year.

Elections and Officer Transitions: Elections for CSMMAC were held the third Monday of March this year. Typically held during the last Monday, this year's elections were held sooner to allow the new executive board to settle in and be trained thoroughly by the old officers. Leaving officers prepared documents for each respective position outlining what they did, challenges they encountered, and things they would have done different.
Once training was complete, the new executive board had a chance to meet twice on their own to plan out the upcoming year and become familiar with others on the board.

Point System: Due to generosity from companies that sponsor CSMMAC, we are able to provide subsidies to those wanting to attend conferences. Any member that comes to a general meeting earns five points and can earn an addition point for answering a trivia question correctly. Volunteers for outreach events earn 5 points per hour, members who paid dues or went to professional development events such as ASM meetings would earn five points, and those who served in an officer position would earn points ranging from 25 to 35 points. Several weeks before MS&T and TMS, point totals are evaluated and depending on the amount of funding available, members with the most points are given a travel subsidy if interested in attending a conference. This allows CSMMAC to incentivize and reward those who dedicate time and energy to the organization as well as those interested in developing themselves as young professionals.

Officer Duties

Each officer position played a crucial role in maintaining the inner workings of CSMMAC. The roles for each position were laid out in the bylaws. The responsibilities assigned to each role are unique and allowed the board to be involved in a variety of activities.

Chair: The principle point of contact between the chapter and ASM Rocky Mtn. Chapter, the public, partnering societies at Mines, and CSM. The chair is responsible for all chapter activities and assumes all duties that are not otherwise delegated by the Bylaws.

Vice Chair: Supports the Chair and aids whenever and wherever the Vice Chair can be of assistance to the Chair. Duties include organizing speakers from professional societies, industry, within the department or CSM to present at meetings.

Treasurer: Oversees all the fiscal responsibilities including producing a semesterly budget, tracking membership dues, and documenting CSMMAC funds and expenditures. Serves vital role in club functioning within the requirements of the school.

Secretary: Documents topics discussed at CSMMAC meetings and maintains all chapter records and posting to social media accounts such as the CSM Material Advantage Chapter page on Facebook. This position includes annual revisions of the bylaws.

Social Chair(s): Coordinate social activities each semester including the Back-to-School/Fall BBQ, End-of-Year Departmental Spring Party, Breakfast Clubs,

Jewelry Casting, and much more. The Social Chair(s) plays a key role in member recruitment and retention.

Outreach Chairs: Organize and develop outreach activities to support departmentals recruitment, campus events, and community service with an emphasis on exposing STEM to K-12 students.

Class Representatives: Promote activities happening for each respective grade level and increasing involvement of students.

Keramos Representative: Relayed information to CSMMAC exec board about events happening and worked with Chair to create joint CSMMAC-Keramos events that would benefit both organizations.

Material Advantage Scholarship Database

CSMMAC encourages members to apply for Material Advantage member organization scholarships as well as scholarships associated with materials companies such as Newmont and the Ellwood Group. CSMMAC maintains a document containing information about recurring scholarships and routinely informs members of other scholarships with less consistent application timelines or those recently created. A number of students in CSMMAC were selected to receive scholarships this year, including Stuart Shirley, the president elect, who was awarded the Ellwood Group's Annual Scholarship. At the request of any of the CSMMAC members, the Secretary compiles a list of the scholarships applicable to that member based on class standing and interest (extractive metallurgy, physical metallurgy, ceramics, etc.) complete with a list of the requirements for the scholarship, the due dates and links to relevant information.

Keramos

This was the first year having a Keramos chapter active on the CSM campus working with CSMMAC to put on events. CSMMAC members had a chance to develop ceramic processing skills and become involved in the ceramic side of the materials science industry. The new group of students put on several events this year such as volunteering at a local elementary school to judge a science fair or hosting an etiquette dinner to teach members how to behave at an upscale multi-course dinner.

One of the primary roles of Keramos has been to manage the hot glass shop that is new to the CSM campus. This job included hosting Soda Lime Sunday events for the campus. One of the goals of Keramos has been to provide opportunities to the campus and department to get hands-on experience with ceramic materials through glass blowing, slip casting, and clay forming. The hope for the future is to expand these capabilities to throwing clay and lampworking.