



Chapter of Excellence Application

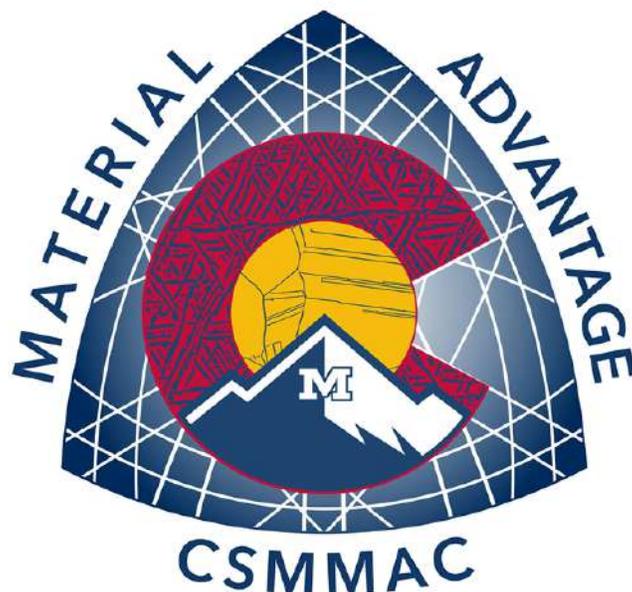
2019-2020

Colorado School of Mines Material Advantage Chapter
CSMMAC

Submitted to ASM International on June 1st, 2020

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May 15, 2020

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. The past year was no exception as they delivered diverse content and opportunities to the MME students even through the remote learning period instigated by the COVID-19 pandemic in the spring semester.

Outreach is a core, high priority activity for CSMMAC, which is utilized to serve the Mines and external communities. These events inspire students at multiple levels in STEM areas and sometimes help serve to recruit them to pursue materials engineering degrees. Often, the MME department solicits help from CSMMAC particularly with demonstrations and sharing student experiences. The number and range of activities that CSMMAC participated in this year was particularly impressive, even with some opportunities limited by shelter-in-place orders. This year, new opportunities were pursued to engage K-12 teachers with materials demonstrations, which is an effective way to develop a long term impact with K-12 students. The on-campus CSMMAC outreach activities, for example doing demonstrations at campus celebrations, are important to recruiting students to the department and joining Material Advantage.

CSMMAC continued to offer novel programming opportunities for the student chapter members this year. They arranged for speakers from a diverse range of fields to speak to the students about technical topics and career opportunities; these meetings were conducted both live and virtually in a couple of instances. The speakers represented fields including technical aerospace, steel, energy, electronic materials, and national laboratories. CSMMAC also attempted new ways to provide value to its members through hands-on workshops, utilizing the creative opportunities available at Mines including the glass shop, forge shop, and foundry. They also sought the opportunity to participate in ongoing inclusion, gender, and diversity efforts at Mines by facilitating a session with the Director of the Title IX program at Mines. Another new activity was a student internship panel, providing student perspective about internships in various fields; there was strong participation from the student audience through Q&A. 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 2019! 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 Dr. Glenn Daehn. Finally, the group organized a virtual event during the remote learning period, which included the Student Awards Night and a game night. The event had a strong showing from students and faculty and included a trivia contest based on facts that students and faculty submitted about themselves. This sort of event is representative of the importance of CSMMAC to the department culture.

CSMMAC has benefitted from first class leadership, communication, and organization amongst the Executive Committee. As advisors, it's been a pleasure to see the executive committee leadership skills grow during their time in office. They have been selfless in their service to their colleagues and community. They have also worked to broaden resources available to the chapter through Mines and fundraising activities. They have identified areas of improvement and established plans to address them, for example being more focused on getting sophomores involved in the chapter.

The MME department considers CSMMAC to be core to its activities and continues to utilize CSMMAC 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 students that 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 Brenneka



Kip Findley

Chapter Overview

The 2019-2020 school year was successful for the Colorado School of Mines Material Advantage Chapter (CSMMAC). Although school campus closed and in-person gatherings were prohibited, CSMMAC continued programming for the rest of the remote learning period. CSMMAC continued impacting students by creating virtual events that helped everyone stay together in a time of social distancing.

CSMMAC sent 17 students to MS&T and 13 students to TMS. At MS&T, CSMMAC received a chapter of excellence award. CSMMAC also participated in the student poster presentations and aesthetic mug competition.

CSMMAC's 2019-2020 goals focused on community outreach, diversifying chapter meeting agendas, and providing support for student academic, professional, and social development. CSMMAC coordinated and participated in events throughout the Colorado front range area that reached out to elementary school to college students and teachers. CSMMAC arranged a variety of technical events from hands-on workshops in the foundry to guest lectures from prestigious industrial and academic backgrounds. CSMMAC orchestrated other events to improve communications with the department, raise awareness about issues within the school and department, and provide constructive feedback to academic courses. Through conferences, chapter meetings, and award ceremonies CSMMAC provided our members with a variety of opportunities to network with professionals. CSMMAC has created a community where students can feel comfortable and supported.

For reference in the report, CSMMAC members are mostly students in the metallurgical and materials engineering (MME) major at Colorado School of Mines (CSM). CSMMAC and the MME department live in a building on campus called Hill Hall.

2019-2020 Officers



Taj Mitchell, Chair



Chufu Xiong, Vice Chair



Jack Dale, Treasurer



Cierra DellaRova, Secretary



Anyka Bergeson-Keller, Outreach Chair



Grace Rome, Outreach Chair, Junior Class Rep



Nyomi Martinez, Social Chair



Desmond Mills, Social Chair



Casey Gilliams, Social Chair



Tanner McAdoo, Senior Class Rep



Caroline Streb, 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 relate to the students and provide insight into possible paths students can take upon graduation.

Some of our speakers were unable to travel to Colorado School of Mines, so Zoom, a video conferencing software, was used to allow them to speak from their office or home. This has been a valuable addition to CSMMAC because it expands the amount and variety of guest lecturers.

CSMMAC has introduced a new avenue of meetings through hands-on workshops to appeal to more undergraduate and graduate students. We put together time slots for students to work in the glass shop, forge, weld shop, and foundry. This provides the students opportunities to learn by action rather than learn through a lecture.

Academia Speakers

Colorado School of Mines, Dr. Angus Rockett: Dr. Rockett, the department head and professor for the metallurgical and materials engineering department welcomed the students back to school at the first meeting in the fall semester. He introduced himself to the students, and presented about his career and available resources to the students within the metallurgical and materials engineering department.

Colorado School of Mines, Dr. Emmanuel De Moor: Dr. De Moor, a professor specialized within steel and a member of the ASPPRC, co presented with Allen Schaneman of Nucor and Bryce Wilcox, who interned with ArcelorMittal, about the AIST scholarships and the internship opportunities that come along with it.

Colorado School of Mines, Dr. John Speer: Dr. John Speer, the director of the ASPPRC and American Bureau of Shipping endowed chair for Metallurgical and Materials Engineering, presented about his career and research in quenching and partitioning. He also discussed his election into the National Academy of Engineering and the applicability of metallurgical and materials engineering courses towards industry and research.

Colorado School of Mines, Drs. Kester and Amy Clarke: Drs. Kester and Amy Clarke, are associate and assistant professors respectively. Dr. Amy Clarke is the site director for Center for Advanced Non-Ferrous structural Alloys (CANFSA) and Dr. Kester Clarke is the Forging Industry Education and Research Foundation (FIERF) Professor. They presented about their careers in

academia and industry, encouraging students to further their education in academia and/or industry.

Colorado School of Mines, Dr. Gerald Bourne: Dr. Bourne, the assistant department head and physical metallurgy lab supervisor, attended the first meeting of the fall semester. He presented on his journey towards being at Mines and his research on metallic glass where he provided in situ micrographs and videos of his results.

Industry Speakers

Chevron, Nika Moyer: Nika Moyer, alumni of Colorado School of Mines and facilities engineer at Chevron, presented about her career at Chevron, starting as a materials engineer and progressing to a facilities engineer. She provided insight on what opportunities metallurgical and materials engineers have at Chevron.

Nucor, Allen Schaneman: Allen Schaneman, alumni of Colorado School of Mines and melt shop metallurgist at Nucor, presented about internship opportunities for the AIST scholarship in the fall with Dr. Emmanuel De Moor and Bryce Wilcox. He also presented in the spring, during the week of the career fair, discussing the continuous casting process at Nucor and potential career opportunities.

Texas Instruments, Ron Cox: Ron Cox, alumni of Colorado School of Mines, presented about the birth and growth of the integrated circuit industry. He joined Texas Instruments in 1964 and witnessed the development of integrated circuits from germanium transistors to silicon integrated circuits.

Ball Aerospace, Christina Rockwell: Christina Rockwell, a materials and process engineer at Ball Aerospace, presented on the career opportunities and internship program at Ball Aerospace. She started as a materials and process engineer intern and transitioned into a materials and process engineer. Along the way, she continued work on a project assigned while an intern in which they were developing ways to remove dust off lenses in space.

Oak Ridge National Laboratory (ORNL), Dr. Chad Parish: Dr. Chad Parish, a research and development staff member at ORNL, introduced data visualization to the students. He recommended various texts and sources for understanding the best ways to visualize data, and provided personal examples of data visualization during his career in research.

National Institute of Standards and Technology, Dr. Nik Hrabe: Dr. Nik Hrabe is a staff metallurgist at NIST in Boulder, CO. He presented a brief overview of NIST and covered the work performed at the Boulder location. He discussed additive manufacturing and his current work regarding additive manufacturing. Dr. Nik Hrabe closed with career opportunities and internship opportunities at NIST.

Other Meeting Events

Forging and Glass Shop: Forging workshops were held during the fall semester in which students signed up for a time slot. Teaching assistants from the forge taught twelve students over a two hour time slot on how to produce bottle cap openers. This provided an introduction on forging. Glass shop workshops were held throughout the fall and spring semester. The process was similar to the forging workshops except students produced a glass paperweight. Students chose the colors and formed the glass on their own with teaching assistant supervision. Ten students attended each hands-on glass workshop.

Gender Issues, Diversity and Inclusivity: Katie Schmalzel, director of the Title IX program at Colorado School of Mines, hosted a meeting in which the members of CSMMAC provided insight on what the metallurgical and materials engineering department is doing well regarding gender diversity and inclusivity and what the department can do better to improve. The meeting was well received and students provided great input for the campus and the department.

Internship Panel: A student internship panel was held during the fall semester. Five members of CSMMAC were a part of the panel. The panel was moderated by faculty advisor, Dr. Kip Findley, who prepared questions to ask the panelists and allowed the students attending to ask further questions. The panelists represented career internship areas of steel production, aerospace, mining, and national laboratory research. The internship panel provided further insight to the students about various career opportunities with the metallurgical and materials engineering department.

Planned Events (canceled due to COVID-19)

Certain CSMMAC events were cancelled due to the COVID-19 pandemic. These events included guest speakers and a welding workshop for the students. The guest planned guest speakers were Dr. Mark Taylor of Blount International, Dr. Craig Brice of Colorado School of Mines, and Dr. Lauren Hafila of Newmont Goldcorp. Dr. Mark Taylor is an engineer in the metallurgical laboratory at Blount International and is also a Colorado School of Mines alum. He would have presented about saw chain design and career opportunities for metallurgical and materials engineers at Blount International. Dr. Craig Brice is the mechanical engineering director at Colorado School of Mines and also directs the Alliance for the Development of Additive Processing technologies. He would have presented about additive manufacturing and his collaboration with Adam Savage in designing and producing the Iron Man suit. Dr. Lauren Hafila is the director for metallurgical services at Newmont Goldcorp. She would have presented about her career as a metallurgist and the career opportunities at Newmont Goldcorp.

Career Development

One of the primary roles of CSMMAC is to provide professional development opportunities to students outside of the classroom. This year we brought 30 total students to conferences compared to our 19 from last year. More students made efforts to develop their professional career this school year, and CSMMAC was excited to support them.

Industrial Tours and Events

Blount International: During the MS&T 2019 conference, Mines alumna Kaitlyn McNaughton gave CSMMAC a tour of Blount International. Blount specializes in producing saw chains and other forestry equipment. Students saw the metallurgical R&D labs and the machines that test and evaluate prototypes of forestry equipment.



ACerS Lunch with a Pro: Students participated in the ACerS Lunch with a Pro at MS&T in September. Students were paired with a professional in the materials science community and they asked insightful questions with regards to their professional career. These one-on-one style networking events are worthwhile for students because they make a strong connection and receive meaningful advice for the rest of their academic and professional career.

Professional Development and Networking

MS&T 2019: CSMMAC sent 17 members to Portland, OR to network with students, professors, and industry representatives, and to attend a variety of short courses and lectures. Students competed in the aesthetic mug competition and student poster contest. Chair Taj Mitchell, Vice Chair ChuFu Xiong, Treasurer Jack Dale, and Secretary Cierra DellaRova attended the Chapter officer workshop. This workshop was a great networking opportunity with other MA chapters. Pictured above is the Colorado School of Mines accepting a Chapter of Excellence award for Material Advantage.



TMS 2020: CSMMAC brought 13 students to San Diego, CA for the TMS 2020 conference. At the conference, students attended research presentations, distinguished lectures, and networking events.

CSMMAC participated in the Materials Bowl at TMS, placing first and making the chapter record of



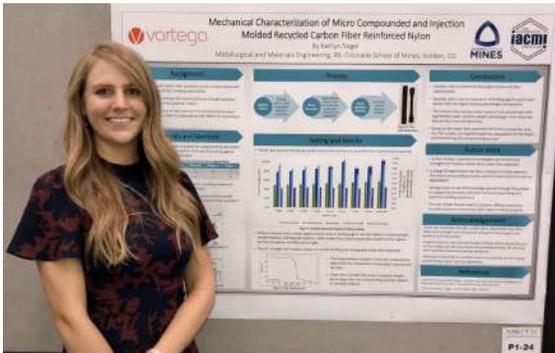
8 of 14 competition victories and the third consecutive victory. Materials Bowl provides a great way for CSMMAC to further represent the Colorado School of Mines for having a strong MME program while also promoting our school and peer support. Pictured to the left are some of our students with Dr. Patrick Taylor, a professor

at Colorado School of Mines, after he presented research for the extractive metallurgy industry.

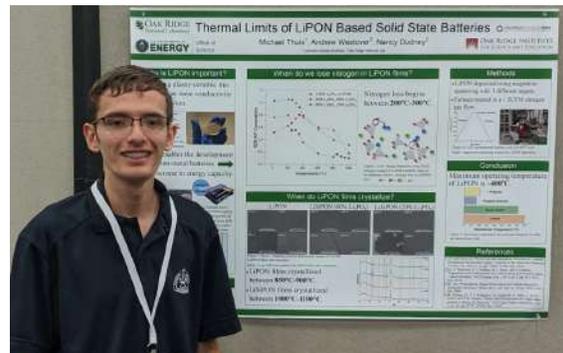
Student Competitions

Aesthetic Mug Competition: CSMMAC member Bobby Puerling designed and fabricated a glass mug for the competition. The mug was blown in the CSM glass shop. Bobby's mug was a finalist in the competition. We plan to compete in the mug drop and aesthetic mug at the next MS&T.

Student Poster Competition: CSMMAC members Kaitlyn Nagel and Michael Thuis competed in this category.



Kaitlyn presented on mechanical characterization of micro compounded and injection molded recycled carbon fiber reinforced nylon. Michael presented on thermal limits of LiPON based solid state batteries.



Materials Bowl: At TMS 2020, graduate students Melissa Thrun and John Copley teamed up with undergraduate students Chad Haunschuld, Cierra DellaRova, and alternate Taj Mitchell to compete. Colorado School of Mines faced University of Illinois in the final round and won. This marks the 8 of 14 Materials Bowl victories and the third consecutive win.



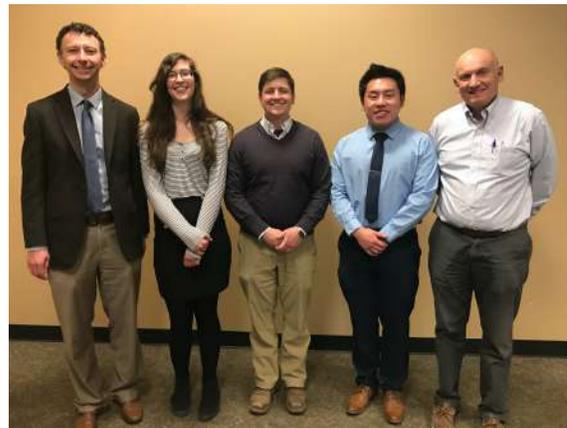
AIST Foundation Real Steel Video Contest: CSMMAC members Lidia Yakovleva, ChuFu Xiong, and Kaitlyn Nagel submitted a video on the ferrous metallurgy in bladesmithing. The video finished as one of the five winners.

ASM Rocky Mountain Chapter

CSMMAC is an active part of the ASM Rocky Mountain Chapter. Taj Mitchell and Connor Rietema served as members of the executive committee to not only improve the ASM Rocky Mountain Chapter, but to help CSMMAC and ASM coordinate events and involve the CSMMAC students.

Barrett Award Night: The ASM Rocky Mountain Chapter holds an award ceremony annually to honor outstanding contributions to the field of material science. Dr. Glenn Daehn of Ohio State University is the 2020 Barrett Award recipient from his work in metamorphic manufacturing. Student attendees use this time to learn about cutting edge work in the materials science field as well as for networking.

During Barrett Award Night there is student recognition as well. ASM Rocky Mountain Chapter and the Colorado School of Mines metallurgical and materials engineering department faculty awards a scholarship to two outstanding students. CSMMAC executive board members Grace Rome and ChuFu Xiong are the 2020 ASM Rocky Mountain Chapter recipients.



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. The highlights from this year include Dr. Tim Quinn speaking on implantable cardiac device leads, Barrett Award night, and Dr. Terry Lowe presenting on transitioning to aluminum conducting lines.

Planned Events (cancelled due to COVID-19)

Congressional Visit Days: Unfortunately, CSMMAC was unable to attend the Congressional Visit Days due to its cancellation as a result of the COVID-19 outbreak. CSMMAC was planning to send five enthusiastic and passionate students to speak to politicians on continuing the funding for STEM related programs. CSMMAC plans on attending in 2021.

Service

This year CSMMAC participated in an abundance of outreach activities, volunteering over 115 hours as a chapter, with 26 different members volunteering this year. Through the events that were hosted, students interfaced with the community and generated interest in STEM, material science, and metallurgy.

Campus Activities



Celebration of Mines - 8/23/19: This is a beginning of the school year event for showcasing student organizations and clubs at the Colorado School of Mines. CSMMAC participates in this event to inform new and existing students about CSMMAC and the Metallurgical and Materials Engineering (MME) department. The CSMMAC booth serves to educate event participants about the MME major with materials engineering demonstrations and share career prospects and personal experiences/internships from

CSMMAC volunteers. For students interested in CSMMAC or the MME department, email addresses are collected for future communications throughout the semester. This event helped a CSMMAC goal to involve more underclassmen in our chapter and was a fun way to start off the year.

Preview Mines - 9/28/19 & 10-26-19: Prospective Mines students, normally high school upperclassmen, come to Mines' campus to see it first-hand and to learn more about the majors offered at the school. CSMMAC always assists the MME department with this event by delivering interesting materials-related demonstrations, and answering questions about Mines and student life. This is another great way to raise awareness for Materials Engineering, and is CSMMAC's way of giving back to the school for its continued support of our organization.



K-12 Outreach

Mitchell (9/26/19) and Shelton (10/16/19) Elementary Math and Science Night: Mitchell and Shelton Elementary Schools annually put on an evening focused around math and science for elementary students and their families. This year CSMMAC volunteered at the events to showcase

basic examples of materials engineering and to educate future generations of engineers about what materials engineering can do for the world. These events also raised awareness of CSMMAC's outreach presence among the community, which we hope to continue to grow and foster.

Materials in STEM (M-STEM) Conference Presentation - 11/4/19: CSMMAC gave a presentation to high school and college teachers regarding materials demonstrations that can easily be replicated in their own classrooms. CSMMAC thought this was a great opportunity to have a wide-spread impact by bringing engaging, materials-specific STEM activities to younger students. After showing how to perform the demonstrations and explaining the science behind them, we helped the teachers practice the demos themselves in order to comfortably perform them with students. Additionally, we informed teachers about the other resources on materials-related demonstrations.

High School Students Field Trip to Mines - 2/13/20: Seniors from Denver East High School visited Mines to use one of our hydraulic presses to test some model bridges that they had built for a class. While the students were at Mines, CSMMAC was asked to show the students materials demonstrations and answer any questions about college, as many of the students were close to making their own transition from high school to college. Many of the students had never heard of materials science and engineering and seemed interested in all of the science behind the demonstrations.

Lockheed Martin National Engineers Week - 2/18/20: High school seniors who planned to enroll at Mines came to the campus for tours and activities. CSMMAC provided a majority of the tour guides for this event, so many of the high schoolers were able to interact and talk to MME students, providing awareness of the organization and our major to the incoming students.

Girls Lead the Way - 2/29/20: This is campus-wide event held by the Mines SWE chapter that invites female high schoolers from Colorado to explore education at Mines. CSMMAC gave tours of the facilities, completed demonstrations for students interested in MME, and answered questions about Mines and college life in general. CSMMAC invited Dr. Yu, a female professor within the MME department, to give a presentation to the girls about her journey as a woman in STEM.

Lockheed Martin Explorer's Post Foundry Tour - 3/2/20: A campus-wide tour led by and for the Lockheed Martin Explorer's Post, an organization to pique STEM interest in high-schoolers of the Denver-Metro area. CSMMAC provided tour guides, and the tour showcased the foundry in Hill Hall, where CSMMAC coor-



minated demonstrations of the foundry, glassblowing shop, and forge. This is becoming an annual event with which CSMMAC assists Lockheed Martin, and it is a great way to show high school students the creative side of materials engineering.

APO Joy Festival - 3/7/20: CSMMAC teamed with Keramos to deliver science-related demonstrations to local youth (children aged 3-10) at Mines' annual JOY (Jamboree for Outstanding Youngsters) Festival at Mines, organized by the Colorado School of Mines coed service and leadership fraternity, Alpha Phi Omega. The goal of this event was to foster children's love for learning and interest in school, and proved to be a lot of fun for both the kids and the volunteers!



Rocky Mountain STEAM Fest - 3/7/20:

CSMMAC provided volunteers for the Rocky Mountain STEAM Fest, where we oversaw the construction of forts using cardboard boxes. STEAM Fest is an annual festival geared toward engaging youth in various hands-on activities

that relate to science, technology, entrepreneurship, arts and making. While CSMMAC didn't directly advance our own agenda at the event this year, we hope to remain involved with this program for years to come. Our goal for next year is to create our own booth at the event.

Mentorship Program

In the fall of 2019, the "Chat with MME" program partnered upperclassmen with underclassmen either in or interested in the Metallurgical and Materials Engineering program at Mines. Upperclassmen provided insight and recommendations about classes, professors, and anything related to MME. This program was developed by the outreach chairs in the 2017/18 executive board and was continued due to positive feedback from mentees. This year we had 17 students sign up to get an MME mentor! This program continued during remote learning via email and/or text communications between mentees and mentors.

Planned Events (cancelled due to COVID-19)

Discover Mines: This event was sadly cancelled, but in years prior, CSMMAC has used this event to talk to high school students interested in Mines, similar to the previously discussed Preview Mines. CSMMAC has volunteers talk to the students to answer any questions students or families may have while also showcasing the MME department and CSMMAC.

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.

Review Day Breakfast

To decrease the stress of finals testing, CSMMAC continued the tradition of spoiling the students of the MME department with a hearty buffet of breakfast burritos, coffee, and orange juice. This year, student led review and group study sessions were organized in addition to breakfast.

CSMMASH Halloween Bash



On Halloween, CSMMAC members participated in a “Will it press?” style event. Students provided items to place in the hydraulic press in order to see how everyday objects reacted to high compressive loads. Costumes were worn, snacks were consumed, and objects were smashed (safely).

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. Everyone from freshman to upper level graduate students were in attendance. The event facilitated bonding amongst students both inside and outside of the department. Over 50 students were served burgers, hot dogs, and vegetarian options.



Forge Your Love Valentines



This Valentine's day CSMMAC hosted a valentine card making extravaganza. Students were given the supplies needed to make valentines day cards for that special someone, whether it be a significant other, friend, or even a well loved professor. Students were also provided cookies and cookie decoration materials to create a custom cookie. Some snacks of different candies were provided and friendships were forged.

Etiquette Dinner

Keramos 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. CSMMAC, Keramos, and MME members who attended were served five courses of formally-presented fast food accompanied by guidelines and examples of how to (and how not to) conduct oneself.

Virtual Spring Party and Student Award Night

A virtual game night was planned in coordination with the virtual spring party to connect with the members of CSMMAC during the COVID-19 pandemic. Students and faculty engaged in fun fact trivia via Kahoot.it, and awards were given to the students. Afterwards, a game night was hosted via Zoom in which the students played the Jackbox Party Pack games which incorporated fun and humorous mad-lib type challenges. The game night was well received by the participants and allowed for a sense of community before the end of the semester.



Planned Events (canceled due to COVID-19)

There were several events planned for the end of the spring semester including: review day breakfast, spring party, and a tie dye event. Spring party went virtual, as previously described. The tie dye event was planned as an end of the school year celebration, where students could creatively express their love of materials science by tie-dyeing their very own t-shirt featuring a materials related pun. This event will hopefully happen next year.

Chapter Management

CSMMAC's events this year were successful because of the officers in charge and the organizational structure in place. Strong communication, trust, and accountability were the core principles that the CSMMAC board maintained to ensure success.

Recruitment Efforts

The traditional recruitment activities for CSMMAC include: Celebration of Mines, Fall Barbeque, and Preview Mines discussed previously. In addition to these events, this year a large focus of the executive board was to increase attendance and participation in meetings and CSMMAC events. At the beginning of the year, student feedback indicated that a greater variety of events was needed to appeal to a wider spectrum of students, so monthly hands-on workshops were added to the traditional line up of technical lectures. Vice Chair ChuFu Xiong also made a large effort to have new technical speakers from a broad range of industries.

Bylaws Overview

Bylaw Revisions: The meeting to revise bylaws is important to keep CSMMAC applicable and properly serving the MME student body. The 2019-2020 revisions were held via Zoom due to COVID-19. The current and upcoming CSMMAC boards were in attendance. The proposed changes and bylaws were sent out to the rest of the CSMMAC chapter to review and make suggestions as well. The following CSMMAC board meeting, the officers voted on the proposed changes. These changes included allowing up to three outreach and social chairs and incorporating the new Colorado American Foundry Society chapter and Alpha Sigma Mu into CSMMAC.

Dues: We collect chapter dues from students participating in CSMMAC each fall and spring semester. Students have the option of paying \$10 per semester or \$20 for the entire year. This year we collected a total of \$1420 representing 89 dues-paying chapter members. The dues we collect go towards purchasing food for chapter meetings as well as our annual member t-shirts.

Elections and Officer Transitions: CSMMAC officer elections and transitions were held remotely via Zoom due to the COVID-19 outbreak. An interest survey was sent to the MME department so students could express interest in an officer position. The candidates that completed the survey composed speeches to be presented at a Zoom meeting. For each position the polling feature on Zoom was used to vote for the new officers. This election was competitive. There were multiple candidates for all but one position. The new officer board was then trained via Zoom for their new roles by the 2019-2020 officer board. The new board then held their first meeting to discuss ideas

with our faculty advisors.

Point System: CSMMAC provides subsidies to students based on their involvement in CSMMAC. Points are assigned to different levels of involvement. Point totals dictate the amount of funding for each student. This allows CSMMAC to reward those who dedicate time to the organization and want to develop themselves as professionals.

Officer Duties

Each officer plays a crucial role in the operation of CSMMAC. Executive board roles are laid out in the chapter bylaws. The responsibilities of each role are unique and help delegate the responsibility of running the chapter and successfully planning and executing a wide variety of events.

Chair: The principle point of contact between the chapter and ASM Rocky Mtn. Chapter, the public, partnering societies at Mines, and Colorado School of Mines (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 a 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. Communicates with the chapter members about events and opportunities. This position includes annual revisions of the bylaws.

Social Chairs: Coordinate social activities each semester including the Back-to-School/Fall BBQ, End-of-Year Departmental Spring Party, Breakfast Clubs, 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. This year three outreach chairs were elected to help manage and support all the outreach events that take place over the course of a year.

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

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

Alpha Sigma Mu Representative: Relay information to CSMMAC exec board about events and work with Chair to create joint CSMMAC-ASMu events that would benefit both organizations.

Record Keeping and Marketing

Attendance is always taken at meetings to keep track of the activity of members of the club using a Google sheet. Members are not required to RSVP for weekly chapter meetings, but do RSVP for special events. RSVPs are recorded by a Google form. Meeting minutes are taken at executive meetings and used to create the officer action list. All attendance, minutes, and RSVP information is shared on the Google drive that all executive members and advising professors have access to. Events are marketed through the weekly email sent to the department so that all professors and students are aware of the events. For the MME classes, class representatives make announcements about events to be sure that everyone remembers chapter meetings, events, and deadlines. Events are also posted to the Daily Blast, a campus wide email, in order to garner interest from students in other majors.

Officer Action List

To ensure that progress is being made on chapter duties, CSMMAC creates a weekly action list. The action list served as an accountability tracker where each officer had a list of tasks with deadlines. Each member can see what others are responsible for thus ensuring tasks are not neglected. This method was successful in completing large tasks by assigning smaller tasks to be completed over a wide timetable. It also helped reduce time in meetings as we can stay focused and follow an agenda.

Keramos

Keramos is a professional fraternity for ceramists that manages the glass shop in Hill Hall. CSMMAC continues to have an excellent relationship with the Keramos chapter on campus, partnering for outreach, social, and professional events. Many members of CSMMAC are involved in Keramos and vice versa. CSMMAC will continue to work with Keramos to coordinate events to positively impact K-12 and CSM students.

Alpha Sigma Mu International Professional Honors Society

ASMu is dedicated to encouraging and recognizing excellence in the materials engineering field. ASMu is a new relationship for CSMMAC as it is a new club on campus. All ASMu members are encouraged to join and take part in CSMMAC. This semester, CSMMAC and ASMu organized online tutoring for all the students for extra support during the switch to virtual classes due to the closure of campus for COVID-19.