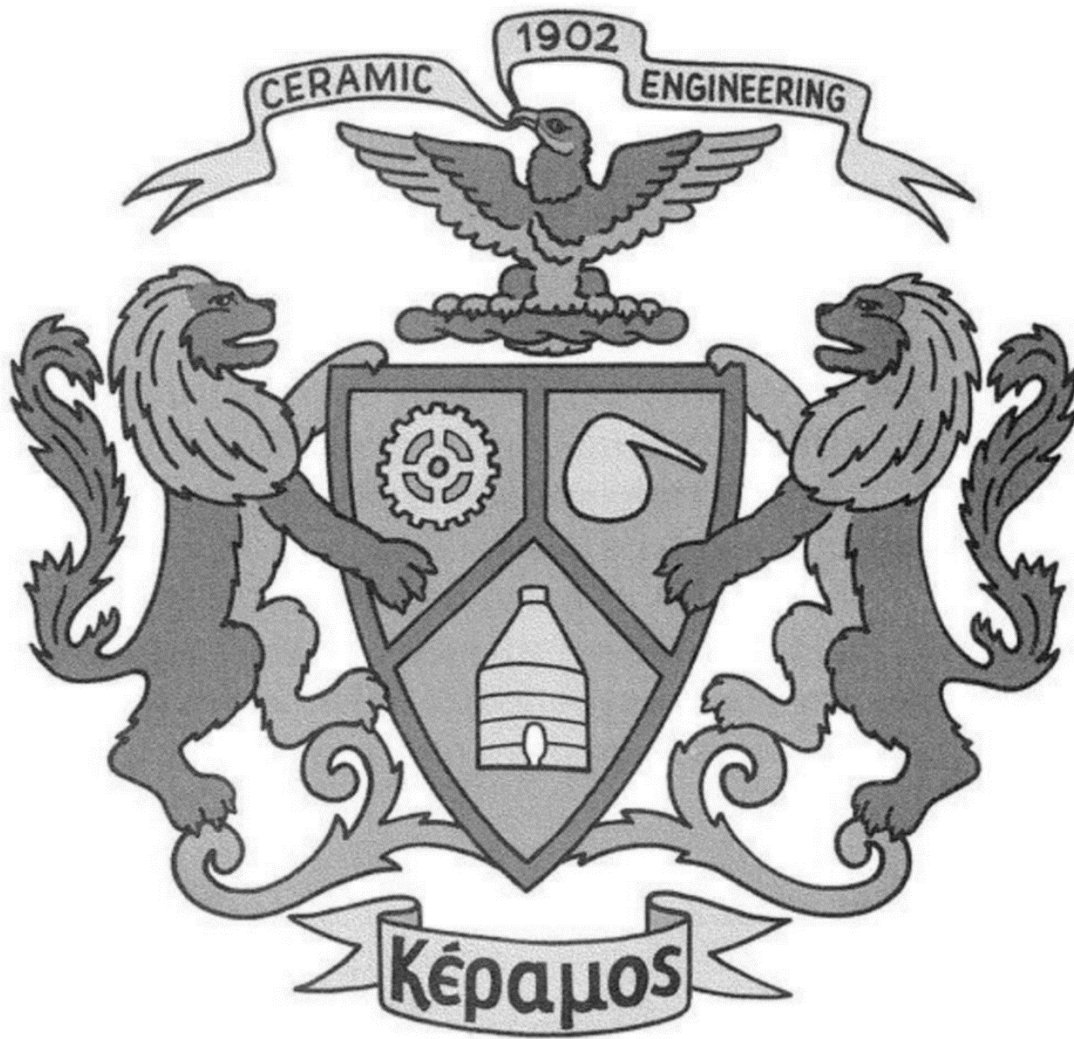


The Colorado Chapter of Keramos



COLORADO SCHOOL OF MINES
EARTH • ENERGY • ENVIRONMENT

2017-2018 Annual Report

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Keragram Summary Article

While the Colorado School of Mines Keramos chapter was founded in Fall 2016, the 2017-2018 academic year was a year of many firsts. We have started holding regular meetings, are having great success in our recruiting, and are starting to make our mark on campus. Our goal as a chapter has been to foster interest and involvement in the ceramics world, especially in a department that focuses mostly on the metallurgy side of materials science. Our growth from 11 to 25 members over the year has confirmed that we are meeting a need within our department.

As a chapter, we have focused a lot on outreach this past year, participating in events advertising clubs on campus, performing demonstrations for prospective undergraduates, judging local science fairs, and promoting the new glass shop to the community. We hope to continue promoting ceramic sciences by continuing events that bring in students and allow them to “get their hands dirty.” We are holding events where people can slip cast objects they bring in, make their own paperweights in the hot glass shop, and we hope to extend this to throwing pottery and lampworking capabilities in the future.

The new hot glass shop on campus that Keramos is taking a lead role in managing has helped contribute to our success this past year. We have been able to raise funds which will allow us to send members to conferences through our glass flower sale for Valentine’s day. Soda Lime Sundays have brought students in from across the campus to get some exposure to glass working (and working with soda lime silicate, hence the name) and the demand for these days is greater than we can supply. Our trained gaffers are also helping faculty members develop an artistic glass blowing class that will be offered in the fall. It is exciting for our members to be involved in setting something up on campus that will be here to stay.

To promote professional development within the chapter we have encouraged and helped our members to attend various conferences throughout the year, including the Materials Science and Technology conference, which 11 of our members attended. We held an etiquette dinner and plan to hold resume building workshops and practice interviews to further promote professional development.

One of the things we seem to take the most pride in, however, is our pun themed events. Soda Lime Sunday, Skeramos (scaring members around Halloween), White Ware Wednesdays are just some of the names for events we have hosted for our members. We have found that when puns are encouraged, our members are excited to come up with new event ideas. While we are happy with the success we have had with outreach and educational events, we are thrilled by the close-knit community that is developing with a shared passion for ceramics.

Katie Gann
President 2017-2018

Chapter Advisor Executive Summary

The Colorado chapter of Keramos has ramped up activities extremely quickly for a new chapter and continues to build on the excitement and energy of the chapter leadership. Students across the department are involved in Keramos activities, and while some faculty were concerned that Keramos would detract from the strength and success of our local Material Advantage chapter, the two organizations are working well together to the benefit of everyone. So far, nearly all of the Keramos activities (those with and without clever names) have been driven by various officers of the chapter; as the number and scope of such activities evolves in the coming years, it will be important for the chapter (and sanity of the officers) that non-officer champions take on some of these activities. This will also help to engage more students in the chapter and serve as an excellent on-ramp for future officers. The success of our glass shop sales provides financial strength that will open up opportunities for many more activities in coming months and years. Overall, the chapter has done a tremendous job over the past year, and we are all excited to continue this growth and success through the 2018-19 school year and beyond.

Geoff Brennecka
Faculty Advisor 2017-2018

Annual Plan for the Upcoming Year

The Colorado Keramos chapter has been busy with this being the first full year that the chapter has been operating on the Colorado School of Mines campus. Our membership has more than doubled from the start of the school year to now, and the future of the club is very promising. This year, the chapter has successfully acted in a cooperative manner with the current Material Advantage (MA) chapter and has brought unique opportunities to its members, too.

Looking forward, the chapter would like to continue with many of the events that were put on this year such as Celebration of Mines, Soda Lime Sunday, the Etiquette Dinner, and Easter Egg Hunt to name a few. We would also like to continue seasonal glass sales, which includes ornaments around Christmas time, pumpkins for Halloween, flowers and hearts for Valentine's day, and roses and birds for Mother's Day. We look forward to training more gaffers and expanding the glass blowing knowledge and experience of our members.

The chapter is also looking for new areas for growth. In the upcoming academic year, the chapter will be hosting a materials science and engineering day for high schools in the area to come to the Colorado School of Mines and experience what it is like to be a materials engineer or scientist. We are also looking to further our programs in professional development: offering more funding to send members to conferences, holding resume building workshops, as well as industry trips and bringing in speakers.

Also, for the fall, we hope to improve upon the planning and overall preparation for the mug drop and disc golf competitions for the MS&T Conference to be held in October 2018. While our university's performance has gotten better over recent years, there is still significant room for improvement.

While this Chapter works hard to expand and succeed, we seem to effortlessly fit fun in too. We have made a trend of naming our events based upon puns from the Keramos name and have many more to come. Spring 2018 included Curdamos (cheese curds at a meeting) and Skeramos (scary movie night on campus on Friday the 13th), and we are looking forward to Cornamos in the Fall (a campus event that promotes Keramos in conjunction with popcorn, corn on the cob, other barbeque food, and the lawn game corn hole).

We are excited to see what the next year has in store!

Kelsey Cannon
President Elect 2018-2019

List of Officers

Outgoing Officers (2017-2018)				
Position	Name	Email	Phone Number	Address
President	Katie Gann	[REDACTED]	[REDACTED]	[REDACTED]
Vice President	Melissa Thrun	[REDACTED]	[REDACTED]	[REDACTED]
Treasurer	Bernardino Arriaza-Nava	[REDACTED]	[REDACTED]	[REDACTED]
Secretary	Andy Ericks	[REDACTED]	[REDACTED]	[REDACTED]
Herald	Jake Ivy	[REDACTED]	[REDACTED]	[REDACTED]

Incoming Officers (2018-2019)				
Position	Name	Email	Phone Number	Address
President ¹	Kelsey Cannon	[REDACTED]	[REDACTED]	[REDACTED]
Vice President ¹	Brionna Dumlao	[REDACTED]	[REDACTED]	[REDACTED]
Treasurer ²	Joseph Van Sant	[REDACTED]	[REDACTED]	[REDACTED]
Secretary ²	John Copley	[REDACTED]	[REDACTED]	[REDACTED]
Herald	Victoria Avance	[REDACTED]	[REDACTED]	[REDACTED]

¹ delegate for the upcoming year

² alternate for the upcoming year

List of Active Members

Active Undergraduate Members			
Name	Initiation Date	Email	Phone Number
Addison Wong*	Spring 2018	[REDACTED]	[REDACTED]
Alex Arnheiter*	Fall 2017	[REDACTED]	[REDACTED]
Andy Ericks	Spring 2017	[REDACTED]	[REDACTED]
Alec Saville*	Spring 2018	[REDACTED]	[REDACTED]
Bernardino Arriaza-Nava	Fall 2016	[REDACTED]	[REDACTED]
Bobby Puerling*	Spring 2018	[REDACTED]	[REDACTED]
Brionna Dumlao*	Fall 2017	[REDACTED]	[REDACTED]
Colin Gilgenbach*	Spring 2018	[REDACTED]	[REDACTED]
Joe Van Sant*	Fall 2017	[REDACTED]	[REDACTED]
John Copley	Spring 2017	[REDACTED]	[REDACTED]
Jordan Palka*	Fall 2017	[REDACTED]	[REDACTED]
Joshua Javier Borja*	Spring 2018	[REDACTED]	[REDACTED]
Kelsey Cannon*	Fall 2017	[REDACTED]	[REDACTED]
Melissa Thrun	Spring 2017	[REDACTED]	[REDACTED]
Michelle Hoffmann	Spring 2017	[REDACTED]	[REDACTED]
Monica Carreta*	Spring 2018	[REDACTED]	[REDACTED]
Stuart Shirley*	Fall 2017	[REDACTED]	[REDACTED]
Victoria Avance	Spring 2017	[REDACTED]	[REDACTED]
Active Graduate Members			
Name	Initiation Date	Email	Phone Number
Brandon Cox	Fall 2016	[REDACTED]	[REDACTED]
Brian Davis*	Spring 2018	[REDACTED]	[REDACTED]
Jake Ivy	Spring 2013	[REDACTED]	[REDACTED]
Katie Gann	Spring 2017	[REDACTED]	[REDACTED]
Michael Walden	Fall 2013	[REDACTED]	[REDACTED]
Rachel Sherbondy	Spring 2015	[REDACTED]	[REDACTED]
Valerie Jacobson	Fall 2016	[REDACTED]	[REDACTED]
* new initiate within last academic year			

Active Faculty			
Name	Initiation Date	Email	Phone Number
Brian Gorman	Fall 1993	██████████	██████████
Garritt Tucker*	Spring 2018	██████████	██████████
Gerald Bourne	Fall 2017	██████████	██████████
Geoff Brennecka	Fall 1997	██████████	██████████



Fall 2017 Initiation



Spring 2018 Initiation

We finally have plaques! We used 3D printers on campus to print cookie cutter outlines for the tangential circles, stars, half moon, and rouleaux triangle. We felt that the triangle added a nice touch to the plaques coming from our chapter, tying us further to our alma mater in the Keramos spirit. All pledges were required to make a plaque before they could be initiated and all active members from our first year were invited to make plaques as well—it ended up being quite the social event.



List of Graduating Members

Graduating Members		
Name	Graduation Date	Email Address
Alex Arnheiter	May 2018	████████████████████
Andy Ericks	May 2018	████████████████████
Alec Saville*	May 2018	████████████████████
Bernardino Arriaza-Nava	May 2018	████████████████████
Brandon Cox	May 2018	████████████████████
Ian Brummel	December 2017	████████████████████
John Copley*	May 2018	████████████████████
Melissa Thrun*	May 2018	████████████████████
Michelle Hoffmann	December 2017	████████████████████
<i>*staying on campus for graduate school, mines.edu email addresses still valid</i>		

Honorary Member Biosketch



The Colorado School of Mines (CSM) Keramos Chapter would like to nominate Dr. Garritt Tucker, an Assistant Professor in the Mechanical Engineering department at CSM, to honorary membership for the 2017-2018 academic year. Dr. Tucker has only recently joined the faculty at our university but is already actively involved in the interdisciplinary Materials Science program here.

Dr. Tucker earned a B.S. in 2004 from Westminster College (Salt Lake City, UT) and his PhD in 2011 from the Georgia Institute of Technology (Atlanta, GA) while majoring in both Mathematics and Physics. During his time at Westminster and Georgia Tech, he received several distinctions including the Outstanding Physics Senior Award, Academic All-American (Soccer), and a Sigma Xi nomination. Professor Tucker spent two years at Sandia National Laboratories (Albuquerque, NM) after graduate school as a Postdoctoral Research Appointee in the Computational Materials and Data Science group. Following his postdoc, Garritt spent four years as an Assistant Professor in the Department of Materials Science and Engineering at Drexel University (Philadelphia, PA). While at Drexel, he was awarded the Outstanding Teacher Award in 2015 and the TMS Young Leader Professional Development Award in 2016.

Dr. Tucker's research group at CSM integrates high-performance computing and theory to discover the fundamental structure-property relationships of materials that will enable the predictive design of advanced materials with tunable properties. Of particular interest are materials where defects and interfacial-driven properties can be effectively tuned or controlled to enable property enhancement, such as nanocrystalline alloys, multicomponent laminates, materials for energy storage, 2D materials, and hierarchical metals. At the core of his group's approach is to develop collaborations and programs that effectively mesh computation with experiment to tailor functional materials. Prof. Tucker's research group leverages a number of computational methods to research materials and their properties, such as density functional theory, atomistic modeling (e.g., Molecular Dynamics and Statistics), phase-field models, and a number of multiscale modeling approaches.

We feel that our chapter, the national chapter, and Prof. Tucker would all benefit greatly from inducting him as an honorary member. As a member of the ME department this could greatly increase his facetime with materials science focused students and could be a great gateway to an increase in his professional network within the ceramics field. Ceramists far and wide would certainly benefit from someone with his technical knowledge, especially considering the push toward computationally derived and designed materials and Dr. Tucker's expertise in modeling grain boundary and other crystallographic defects in regard to material properties.

(Garritt Tucker, phone: [REDACTED], email: [REDACTED])

Treasurer's Report

The following table describes the chapter's deposits and expenses. The given dates are when the money was spent or received. For all deposits, any taxes or fees have been deducted. We anticipate that the Body of Student Organizations allocations will be similar for the following academic year, but after that we will be able to request up to \$2500 from the school. We hope to use our funds to send more of our members to conferences throughout the year.

Date	Description	Amount	Total
25 Aug. 2017	Starting Balance	0.00	0.00
25 Aug. 2017	Dues	50.00	50.00
6 Sept. 2018	National Dues 2016-2017	-100.00	-50.00
25 Oct. 2017	Dues	40.00	-10.00
27 Oct. 2017	BSO Allocation	200.00	190.00
13 Nov. 2017	Dues	45.00	235.00
29 Jan. 2018	Dues	20.00	255.00
12 Feb. 2018	Flower Sales	75.00	330.00
12 Feb. 2018	Flower Sales	648.34	978.34
12 Feb. 2018	Dues	30.00	1008.34
13 Feb. 2018	Flower Sales	441.58	1449.92
14 Feb. 2018	Flower Sales	609.53	2059.45
26 Feb. 2018	Cheese Curds (for Curdamos)	-40.46	2018.99
26 Feb. 2018	Dues	30.00	2048.99
9 Mar. 2018	Plaque Materials	-101.56	1947.43
12 Mar. 2018	Flower Sales	65.12	2012.55
12 Mar. 2018	Dues	20.00	2032.55
12 Mar. 2018	Frit Sale	9.30	2041.85
2 Apr. 2018	Dues	20.00	2061.85
7 Apr. 2018	Etiquette Dinner	-575.23	1486.62
9 Apr. 2018	Frit Sale	55.81	1542.43

Chapter Activities

Educational Outreach

Celebration of Mines



This academic year, Keramos participated in the annual Celebration of Mines, an event hosted by the Student Activities Office on campus for the clubs to showcase who they are and what they do to the incoming freshman class. At this event, the chapter worked with the Material Advantage chapter to have materials science demonstrations to advertise for the two organizations. Keramos provided Prince Rupert's drops made in the hot glass shop for this event to show how the processing of glass can drastically affect its properties. At the booth, the chapter also had pieces that were made in the glass shop, 3D printed items, refractory bricks and candy for those who wanted it. This event promoted our presence on campus as well as brought in many members (pictured left).

Ralston Elementary Science Fair Judging

In February, Ralston Elementary School reached out to Brian Gorman about CSM students helping judge their annual science fair. Mines students were asked to judge the science fair to bring a different perspective to the students' projects that the parent volunteers could not provide. The coordinator informed us, after the event, that the students enjoyed the detailed feedback and proposed further experiments that they received. There were 12 Keramos members that volunteered to judge the fair and we are hoping to make this an annual event.

Discover/Preview Mines

Every semester the Colorado School of Mines hosts events for prospective students to come on campus and tour the majors in which they are interested. The MA chapter on campus hosts the tours for our department and approached our Keramos chapter to have gaffers working during this event. This was done to promote the department and all that can be done within it. During this time, prospective students were able to see gaffers working hot glass first hand as well as ask any questions that they may have had. We have received feedback from parents attending this event

that getting to see the capabilities in the foundry is one of the most interesting part of the campus tours.

Easter Egg Hunt

This semester, Keramos collaborated with Greek Life to host an Easter Egg Hunt for the campus. Due to Easter being over spring break, this event occurred the Monday after break which was also the Monday after Easter. The organizations hid over 200 eggs filled with candy, stickers and keychains. There were 7 eggs hidden that contained a voucher allowing the person who found it to get an egg that was made in the hot glass shop, shown below.



This event acted as a promotional event for the chapter, getting our name out to campus as well as promoting the major. In future years, we hope to make up a pamphlet advertising our department, especially because many younger students on campus who have not yet declared their major do not hear about the MME department right away.

Professional Development

Conferences

In addition to the 11 members of our chapter who were able to attend the annual Materials Science & Technology conference this year, we had several members attend other conferences throughout the year.



Secretary Andy Ericks was awarded a travel stipend by the Ceramic and Glass Industry Foundation to attend the 78th Conference on Glass Problems in Columbus, OH from November 6-9, 2017 (right). Andy had the opportunity to interact with industry leaders to learn about large scale operations, batching, and design parameters associated with glassmaking. He toured the Owens Corning plant in Newark, attended presentations, and visited exhibitors' booths. His conversations with Johns Manville (JM) employees at the conference prompted him to select his Senior Design project on tensile testing of E glass fibers in collaboration with JM.

Members of the chapter attended the Electronic and Advanced Materials conference in Orlando, Florida in the Spring of 2018. They attended various networking events, poster sessions, and ceramics-related meetings. The conference was great in terms of meeting graduate students and professors from other institutions. They were able to provide advice and guidance for future educational and career plans.

Later in the spring, our chapter had four members attending the annual TMS conference in Phoenix, AZ. The students attended various networking events meeting with many companies as well as others at different institutions. During the time in Phoenix, the students supported the CSM Materials bowl team, which consisted of two Keramos members. John Copley, Secretary Elect, and Melissa Thrun, Vice President, helped the team in taking home the 2018 Materials Bowl Championship. A picture of the team with the TMS President, David DeYoung, is shown below.



Pictured from left to right: Joe Jankowski, Melissa Thrun, David DeYoung, John Copley, Chloe Johnson

Etiquette Dinner

The goal of the etiquette dinner was to promote professional development and prepare members for future situations in which proper dining etiquette is a requirement. Since we are not well established and have never conducted an etiquette dinner before, we did not ask for company funding. Instead, we tried to juxtapose the fancy meal setting with inexpensive fast food. We served McDonalds french fries, Campbell’s tomato soup, Taco Bell quesadillas, fried chicken from KFC, and grocery store ice cream—we even plated it as if at an actual catered meal. A presentation featuring proper dining etiquette went alongside the meal, showcasing rules ranging from how to use silverware to how to order a bottle of wine. We received great feedback from those members in attendance and hope to continue the event in the future (possibly catering the event).



Service to Ceramics Community

Glass Shop Management

One of the biggest tasks our chapter has been working on this year has been setting up the new hot glass shop, training new members, and figuring out how it should be run. We have set up a committee to oversee a lot of the day-to-day activities as well as organizing workshops to make inventory for sales and our “Soda Lime Sunday” events.

We have received a lot of attention for the glass shop both on and off campus. A local news channel came in and recorded a story about the glass shop, which has brought in even more attention from alumni and other members of the community. We have also been contacted by members of the school’s foundation about setting up a fundraising opportunity for the school where donors can bid for the opportunity to come to the shop for a day of glass blowing. We feel very fortunate to have these capabilities in the department and that we get to be so involved in the management.

Mold Making Monday and White Ware Wednesday

During the mandatory field session class that all students in the Metallurgical and Materials Engineering Department have to take, each student is given the opportunity to slip cast an object. This process ends up being rushed and few students end up getting to take home what they have tried to cast. We are trying to offer anybody in the department the opportunity to successfully slip cast an item that they bring along with them. Participants start by building a wooden box and casting a one-piece plaster of Paris mold. This mold sets and dries over a period of two days, after which participants come back and cast a porcelain piece. These are dried, bisque fired, glazed and glaze fired over the course of the next week.

While the first event will only be for Keramos members, we hope in the future to be able to extend this event to the entire department and then open it up to the entire campus to promote various methods of ceramics processing and give people the opportunity to get their hands dirty.

Soda Lime Sundays

Soda Lime Sunday (SLS) is an event that Keramos started, modeled after the current event put on by the foundry, “Free Pour Friday.” This event is one in which anyone on campus can come into the hot glass shop and make a paperweight with the assistance of trained gaffers. The chapter has put on four Soda Lime Sundays targeting different audiences, including one for Keramos and Material Advantage members, one for first year undergraduates, and two open to all of campus. We believe that these events help put Metallurgical and Materials Engineering at Mines on the map, as it were, and gets students excited about the applications of materials science. In point of fact, we know that students are excited because the sign-ups for Soda Lime Sundays are usually full within half an hour of going out to campus at 6:00 a.m.



As you can see in these pictures, the SLS participants sit at the glassblowing bench and shape the hot glass while one trained gaffer gives instruction and another takes the punty rod back and forth between the bench and the reheat furnace. Guests learn about heat transfer, how heat affects viscosity, residual stresses in glass and the use of various shaping tools. After the paperweights are annealed overnight the students get to take them home.

Glass Shop Sales

The primary source of fundraising was the sale of objects produced in the glass shop at Mines. The first sale, occurring the Monday through Wednesday (Feb 11-14) of the week of Valentine’s Day. Over 150 flowers (or other Valentine’s Day themed items) were sold, for a total of over \$1800 in revenue. The sale was so successful, more flowers were required to be made during the middle of the sale in order to meet demand. Another similar event will be held April 23rd, where flowers, birds, vases and other spring themed items will be sold in a Mother’s Day/Spring Sale. In the future, we plan to hold several other fundraisers throughout the school year, including fall and Christmas themed glass sales.

These events have gotten many students, particularly younger, undeclared students, interested in glass and materials science as a whole. We are finding that across the board, being

able to show off the capabilities we have within our department is proving to be one of the best advertisements for the major and Keramos.



Alumni Engagement

Since we are finishing up our second year as a chapter, we only have a handful of alumni at this point. As our alumni base continues to grow, we hope to invite members back to speak with us about what they are doing in their careers and hopefully provide valuable insight for the current members. We also plan to invite all alumni members to etiquette dinners in the future and hold SLS events for them periodically.

Participation at Annual Convocation and Business Meeting



This year we were able to send three members to the convocation and business meeting at MS&T17 as well as have nine other members of the chapter at the conference. We were excited to attend convocation as it was our first attendance at the national event. We were able to speak with executive members of other chapters as well as the national board, which was very helpful for our new chapter. During the conference, we had students compete in the mug drop, disk golf and domesday competitions. Herald Jake Ivy made a goblet that was entered in the aesthetics portion of the Mug Drop Competition at MS&T 2017 (pictured to the left). The chapter secretary, Andy Ericks, volunteered at the Materials Explorers event, showing students how manufacturing glass fibers is similar to pulling hot jolly ranchers.

Interchapter Communications and Collaboration

Being a new chapter, we have relied heavily on the guidance and support of other Keramos chapters. Attending the annual convocation was big for us as it was the first time we had been able to meet students from other chapters. By finding time to have meals with the executive members of several other chapters, we were able to ask questions and learn about how other chapters manage various events and the chapter as a whole. The monthly conference calls have allowed us to ask questions about balancing between being our own organization on campus while maintaining a close relationship with the local MA chapter and any other management questions that arise (as well as sharing puns).

We have been grateful for the guidance and hope to be able to help other chapters in the future as we continue to learn more. Eventually we hope to be able to coordinate with other chapters about attendance at various conferences so that we can get to know other chapters' members better to socialize and brainstorm.

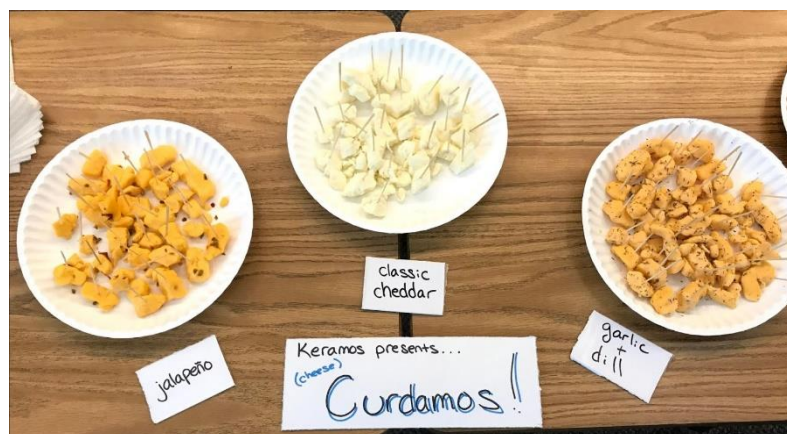
Social Events

Skeramos (pronounced scare-a-mos)

In the spirit of Halloween, our chapter held a scary movie night for Keramos members! Social events like this help knit together a tighter community, which is important to fostering and maintaining a successful student organization. Plus, we liked the pun.

Curdamos

Because we were able to come up with such a cheesy pun, we decided to turn one of our chapter meetings into "Curdamos." We contacted one of the local businesses in Golden that opened recently, The Cheese Ranch, about providing the cheese curds for this event. Our members were definitely happy at the meeting having snacks and we, again, liked the pun.



KLNOSE

Keramos Liquid Nitrogen Object Smashing Event (KLNOSE) was developed as a stress relief event for the week preceding fall finals. Students were encouraged to bring objects with ductile to brittle transitions in the range between room temperature and liquid nitrogen (77-300K). The students were then allowed to freeze the objects they brought (or other items provided at the event) and then smash them to relieve the stress of upcoming finals, such as that given by Geoff Brennecka for his Ceramic Engineering class. We found that freezing whipped cream and then eating it made for a dragon-like effect when we breathed out of our noses.



We look forward to finding more events to promote professional development and the communal feeling in our chapter (they must, however, have fun names).