



Missouri Chapter of Keramos

2019 Annual Report

Excellence • Scholarship • Tradition

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S&T

University of
Science & Technology

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I. Chapter Advisor Executive Summary

This past year has been another very productive year for the Missouri Chapter of Keramos and it has been a real pleasure for me to be advisor. The Chapter and the officers set some aggressive goals a year ago and pushed hard all year long to accomplish them. At times it was a struggle but they managed to juggle all of their other commitments, their coursework, and their professional development activities within Keramos, ending the year with an extremely successful banquet that had a very large attendance. The Keramos officers organized the event, as has become the custom, and approximately 125 attendees had an enjoyable evening of celebration and recognition.

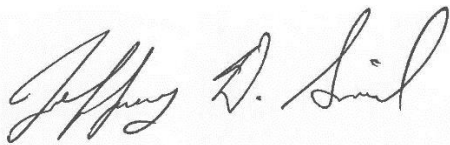
Various activities that were completed throughout the year are detailed in the report the Keramos officers have provided. Many of them are quite impressive and a strong indication of the commitment the Chapter has to aiding the MSE department at Missouri S&T, introducing the public to the role of materials in society and preparing members for their professional careers.

It is obvious that the past year has been a productive one for the Missouri chapter. Drew Jacobs and his executive board were not satisfied with *status quo* and dedicated themselves to improving the Chapter. They improved events that had been previously successful, they resurrected and successfully completed activities that hadn't worked well the past few years, and they reacted to new opportunities to expand their impact on the materials community. Additionally they identified exciting new events for the coming year, which is often a forgotten responsibility, and that will help ensure the future success of the chapter. They make me proud to be a member of Keramos and even prouder to be their faculty advisor.

The incoming executive board is strong. It is a good mix of experienced leaders and younger students who show great promise for the future. Nicole Nulsen her executed board excited and motivated and confident they are more than capable of carrying on the long tradition of Keramos at this institution.

As always, it is a joy to serve as faculty advisor to the students of the Missouri chapter of Keramos. I am proud to be a member of their fraternity.

Jeffrey D. Smith



Keramos Faculty Advisor – Missouri Chapter 2019-2020

II. Annual Plan for Upcoming Year

I am honored to serve as president of the Missouri University of Science and Technology Keramos chapter for the upcoming year. Coming from the position of Vice President, I have had the opportunity to observe first-hand how our Keramos chapter runs and think about how I can make it even better. I would like to make this a year of bringing everyone in Keramos together whether it be alumni, current members, or new members. To achieve this, I would like to look at new member and current member involvement, initiate application process, and alumni relations.

To improve new member and member involvement, I plan to work with the incoming Herald to plan new initiate social events and with the Secretary determine the best way to communicate with members to get our events out. The new initiate social events can be a ceramic related or non-ceramic related fun activity or even a study session for a common exam. The goal is to get more timid or less social students acclimated with the department and with other students in their classes. Regarding the communication of events, we currently utilize multiple different avenues of communication: email listserv, orgsync, and GroupMe. There are pros and cons to each, but I hope to get everyone on the same page and make sure that all members are receiving pertinent organizational information.

Along the same lines of new member involvement is current member involvement. To improve this aspect, I plan to work with the entire board to form new chairs to add to our board. Some that have been proposed are merchandise chairman, service chairman, and Materials Science and Technology Conference competition chairman. I believe that this will encourage members to get involved with the E-board and to grow as leaders and organizers within the organization. I also hope that this will allow more members of Keramos to shine through and step up into leadership positions.

To improve the member application process, I hope to propose a more detailed application with at least one other short answer question. I believe that it will be easier to pick out the best future members by adding a few more questions. This past year, we also tested out accepting online applications as well as paper applications. In my opinion this went very well, so I hope to try and move towards all online applications.

Finally, I would like to establish regular alumni interaction and relations. Some ideas that I have for this are hosting small events at conferences and sending out a monthly or bi-monthly (every two months) newsletter to keep alumni connected. I myself am proud to be a member of Keramos and would hate to completely lose ties with the organization. I pride myself on the accomplishments of the Missouri University of Science and Technology Keramos chapter and I would like to keep that sense of pride going in our alumni.

Nicole Nulsen



Keramos President – Missouri Chapter 2019-2020

III. List of Officers for Upcoming Year

Name: Nicole Nulsen ¹ Office: President Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Alissa Reynolds ¹ Office: Vice President Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]
Name: Clare Sabata ² Office: Secretary Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Sydney Boland ² Office: Treasurer Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]
Name: Mikaela Weisman Office: Herald Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Tony Luebbert Office: Historian Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]
Name: Jay Mrotek Office: Nominations Chair Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Advisor: Dr. Jeff Smith Address: [REDACTED] [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]

Officers attending convocation as delegates at MST 2019¹

Alternate delegates to attend MST 2019²

IV. Active Members

<u>November 15th, 2018 Initiates</u>		
Bax, Alyssa	Graber, Allison	Meyer, Amber
Boland, Sydney	Grier, Sophie	Sabata, Clare
Childers, Alaina	Lenox, Megan	Schneider, Anna
Colletti, Catherine	Lewis, Theodore	Theriac, John
Edic-Gordey, Nathan	Markowitz, Daniel	Wiles, Brooke
<u>April 17th, 2019 Initiates</u>		
Abbott, Ashleigh	Hawickhorst, Caroline	Smith, Steven
Asbury, Meredith	Johnson, Caelen	Stacy, Jacob
Christian, Jordan	Johnston, Julia	Sutalski, Elliot
Decker, Michael	Malpocker, Sophia	Thomasson, Caitlin
Duncan, Katie	Mrotek, Jay	Weyrauch, Noah
<u>Undergraduate Members</u>		
Anselmo, Nicholas	Jaeger, Shannon ²	Rodell, Olivia ²
Barr, Adam	Jones, Matthew ²	Ryckman, Cambria
Blatt, Rebekah ²	Kaczmarek, Anna	Scheer, Austin ²
Buscher, Kathryn	Keil, Haley	Schneider, Teresa
Buznego, Alana	Khayat, Michael	Schott, Andrea ¹
Cahoon, Mary	Luebbert, Anthony	Schottel, Jaden
Chadbourne, Connor	Martin, Hannah	Schuman, Jared
Dachroeden, Grant	Mefford, Elissa	Stansbery, Alexander ²
Drury, Daniel ¹	Mitchell, Auben ²	Steinbach, Derek ²
Dunn, William ²	Nulsen, Nicole	Stone, Miranda
Eaves, Hannah	O Neill, Erin	Thompson, Lawrence
Fosdyck, Robert	Phinney, Cole	Timme, Nicholas

Gordon, Joseph	Prothman, Ben	Vishy, Matthew
Grieshaber, Doran	Read, Aaron	Weiseman, Mikaela
Hopper, Danielle	Reynolds, Alissa	Willenbrink, Luke ¹
Jacobs, Drew ²	Ricketts, Bailey	
<u>Graduate Members</u>		
Brune, Paul	Murchie, Alec	Stanfield, Austin
Cook, Rachel	Richards, Tyler	Volz, Steven
Jarmann, Jecce	Scott, Jonathan	Waldo, John
Jarvis, Leiren	Scott, Margaret	Wittmaier, Connor
Lapeyre, Jonathan	Shoaib, Noor	
Martin, Austin	Spratt, Myranda	
<u>Faculty</u>		
Dr. Laura Bartlett	Dr. Wayne Huebner	Dr. Mark Schlesinger
Dr. Richard Brow	Dr. Aditya Kumar	Dr. Bob Schwartz
Dr. Anthony Convertine	Dr. David Lipke	Dr. Jeff Smith
Dr. Fatih Dogan	Dr. Scott Miller	Dr. Jeremy Watts
Dr. Bill Fahrenholtz	Dr. Joe Newkirk	Dr. Kelley Wilkerson
Dr. Greg Hilmas	Dr. Ron O'Malley	
<u>Emeritus Faculty</u>		
Dr. Harlan Anderson	Dr. Darrel Ownby	Dr. Dave Van Aken
Dr. Delbert Day	Dr. Mary Reidmeyer	Dr. Von Richards
<u>Honorary Members</u>		
1947 – John C. Hostetter	1986 – Chandra Ray	2005 – Ted Day
1948 – Frederick Norton	1987 – Mohamed Rahaman	2006 – Ron Kosher
1950 – Paul Smith	1988 – Lokeswarappa Dharani	2007 – Eric Bohannan
1953 – Charles Smith	1989 – James Stoffer	2008 – Matt O'Keefe

1961 – William James	1990 – Daniel Armstrong	2009 – Ted Ruppert
1970 – John Arthur	1991 – Larry Heying	2010 – Sam Stang
1970 – John Holt	1992 – Richard Hagni	2012 – Cindy Schwartz
1971 – Harlan Smith	1994 – Daniel Stutts	2013 – S. Jill Glass
1973 – Hector McDonald	1996 – Bill Hibler	2014 – Jaci Huebner
1975 – Leroy Hart	1997 – Kent Peaslee	2015 – Mike Carson
1977 – Manfred Wuttig	1998 – Eric Schramm	2016 – Glen H. Kirby
1978 – Paul Cash	1999 – Ken Goretta	2017 – Kathleen Shugart
1980 – Edward Epstein	2000 – Terry Tiegs	2017 – Mrityunjay Singh
1981 – John Bartel	2001 – William Dawson	2018 - Gary Penell
1983 – Melvin Churovich	2002 – Carl Moody	2019 - John Story
1984 – Don Sparlin	2003 – Scott Miller	
1985 – John Dial	2004 – Chris Ramsey	

Members Graduating Fall 2018¹
 Members Graduating Spring 2019²

A. New Members

The Missouri Chapter of Keramos carried on the long standing tradition of recruiting the best and brightest of our materials science department students into Keramos. Over the course of the past year we had 42 qualified students apply, and the Executive Board worked meticulously to review applications and admit the most exemplary students. Our chapter initiated 16 members on November 15th, 2018 and will initiate 15 members on April 17th, 2018. Among this collective group of 31 initiates were two metallurgical students, one professor, and seven freshmen students.



For both classes of initiates the initiation process was meant to help them to grow professionally and become more familiar with the MSE department at Missouri S&T. The process began by submitting their application to become a member of Keramos. This application gave board members a view into the students' involvement on campus, their hobbies, and their desire for wanting to join Keramos. This year the application process was altered slightly by changing the application from paper to electronic. This was done to distribute the applications easier and to allow multiple board members to review applications simultaneously.

Once all of the initiates had been selected and notified, meetings were set in place for the initiates to meet one another and learn about the initiation requirements. This year the initiation process mandated attendance at the Missouri S&T career fair, the MSE department etiquette dinner, one lunch and learn, and one Miner Job for Major Cash (MJMC). These attendance requirements were coupled with the requirement to make a ceramic Keramos plaque and pass an initiation test.

It has been a requirement for Keramos initiates to attend the Missouri S&T career fair during their initiation semester for at least the past three years. All initiates submitted their resumes along with their membership applications and Executive Board members reviewed them to give feedback as needed. All of the initiates were encouraged to attend to help with professionalism skills and to network with employers. Many of the initiates obtained internships and co-ops from attending the career fair. It was communicated to our Executive board that our students were all very bright and professional with networking with a new company attending the Missouri S&T career fair.

By attending the etiquette dinner initiates learned how to maintain professionalism during formal dining. A presentation is given which reviews proper etiquette which includes various examples of what not to do modeled by professors. By learning this information initiates are shown how to make the best impression during a dinner interview.

One of the best ways the initiates get to know one another is through the plaque making process. The initiates rolled out a mid-fire stoneware clay body and cut the slab into the shape of the Keramos badge. The initiates added the stars and moon shape to the badge either by cutting out shapes and attaching them or indenting the shapes into the slab. "Keramos" was carved into

the badge and then initiates took special care to smooth all sides and surfaces of the badge to produce the best product. The plaques were dried and bisque fired and then glazed with both blue and gold glazes to represent Keramos.

As in years past, there was a competition between initiates to determine who could make the best plaque. This called for initiates to meticulously review their plaques and correct any imperfection that was noticed. It was noted that by indenting the stars and moon instead of having it raised led to an easier glaze application and an overall better plaque. Examples of both types of plaques have been saved for future Heralds to show to initiates to inspire them to make the best plaque possible.

The final requirement before initiation is for the initiates to pass a pledge quiz. At the beginning of the initiation process initiates were given documents covering the history of Keramos as a national organization, the history of Keramos at Missouri S&T and its importance on our campus. This information was covered on the test as well as basic knowledge of materials and information about our Materials Science and Engineering department. All students that were initiated into the Missouri Chapter of Keramos successfully learned the history of Keramos and completed the initiation quiz.

Once all of these tasks were completed, initiated were inducted into our chapter through an induction ceremony. Our initiates were welcomed into our chapter alongside current student members dressed professionally while professors donned their graduation regalia. After the ceremony was complete our new members were treated to a special dinner where they got to meet current Keramos members and obtain signatures on the backs of their Keramos plaques. The picture included was taken after our Fall 2018 class was initiated.



V. Graduating Members

Fall 2018 Graduates

<p>Daniel Drury Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Luke Willenbrink Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>
<p>Andrea Schott Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	

Spring 2019 Graduates

<p>Rebekah Blatt Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Auben Mitchell Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>
<p>William Dunn Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Olivia Rodell Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>
<p>Drew Jacobs Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Austin Scheer Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>
<p>Shannon Jaeger Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Alexander Stansberry Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>
<p>Matt Jones Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>	<p>Derek Steinbach Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]</p>

VI. Missouri Chapter Honorary Keramos Nominations

The Missouri Chapter of Keramos would like to nominate Dr. John Greg Story as an honorary member for the 2018-2019 school year. Dr. Story is a physics professor and researcher of various materials-related applications of physics at the Missouri University of Science and Technology.

Dr. Story received his B.S. in Physics from the University of Oregon in 1984 and Ph.D., also in Physics, from the University of Southern California in 1989. He has collaborated on thirty six publications since 1986 and has more recently done materials-related research regarding nanoparticles. In addition to his scientific work, he is also a connoisseur of the arts, having written a handful of novels and poetry books, as well as performing in several plays in local theaters.

Dr. Story has positively impacted the education of over 500 Ceramic Engineering undergraduates at Missouri S&T during his time as a professor. Dr. Story is always enthusiastic and passionate about the physics he teaches, and willing to help students whenever necessary. His contributions to the practical knowledge of physics to Keramos students and others alike makes him an outstanding candidate to become the next honorary member of the Keramos Fraternity.



Phone Number: [REDACTED]

Email: [REDACTED]

VII. Treasurer's Report

The Missouri Chapter of Keramos obtained a total of \$3,981.00 and spent a total of \$3,012.89 over the course of the 2018-2019 school year. The \$3,881.00 was gained through a combination of fundraising events, seminar and item sales, and CGIF proposal funding. The \$3,012.89 was spent on the CGIF project and department events such as the Etiquette Dinner. The following two tables contain the annual expenditure report for the Missouri Chapter for both the online bank account and cash bag.

Bank Account				
Date	Debit	Credit	Balance	Description
8/20/18			\$471.52	Beginning balance
10/23/18	\$300.00		\$171.52	National dues
10/29/18	\$25.00		\$146.52	Returned item fee
11/2/18		\$1,750.00	\$1,896.52	CGIF project funding and Nationals reimbursement
12/6/18	\$582.50		\$1,314.02	Christmas sweaters
1/28/19		\$198.00	\$1,512.02	Uncashed check deposit
2/25/19	\$983.39		\$528.63	Drew Jacobs reimbursement for CGIF project equipment
3/14/19		\$400.00	\$928.63	MJMC (Smith)
4/10/19		\$100.00	\$1028.63	MJMC (Richards)

Cash Bag				
Date	Debit	Credit	Balance	Description
8/20/18			\$578	Beginning balance
09/12/18	\$200		\$378	Deposit for Etiquette Dinner
10/25/18		\$140	\$818	Seminar sales
10/26/18	\$684		\$134	KeySport maroon polos
10/28/18		\$300	\$678	MJMC (O'Malley)

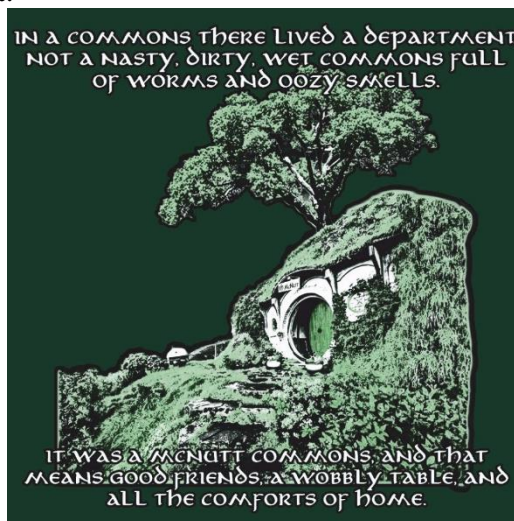
11/8/18		\$95	\$229	Seminar sales
11/15/18		\$123	\$352	Seminar sales
11/15/18	\$206		\$146	Alex's Pizza for Initiation
11/16/18		\$174	\$320	Advisor-found past funds
12/6/18		\$470	\$790	Seminar and sweatshirt sales
1/25/19		\$70	\$860	Sweatshirt sales
2/14/19		\$35	\$895	Seminar sales
2/21/19		\$53	\$948	Seminar sales
2/28/19		\$45	\$993	Seminar sales
4/3/18	\$32		\$961	AFS for past cross-casting social
4/4/18		\$28	\$989	Seminar sales

VIII. Chapter Activities

A. Fundraising

Item Sales

Keramos had another successful year of merchandise and item sales with some exciting new additions. The club held weekly “Seminar Sales” every Thursday before Seminar, and both old and new items were sold at these events. Leftover inventory of favorites such as the phase diagram and “Cera-mist” shirts were put up for sale as well as the blue and yellow Keramos polos. Other items such as hats and padfolios were also sold. Two new items were offered this year as well. Maroon polos with the embroidered Keramos crest were ordered as well as festive ceramic-themed Christmas sweaters designed by the executive board. These were extremely popular, and large quantities of both items were sold. Keramos also created the design for the back of the St. Patrick’s Material Science Department sweatshirt which had to pertain to the theme of “Middle Earth.” Keramos did not profit off of this design but is a traditional way the club gives back to and assists the department.



Miner Jobs for Major Cash

Starting in the fall of 2014, the Missouri Chapter began a program entitled “Miner Jobs for Major Cash” (MJMC), in which student members of the chapter would perform a service project for a faculty member in the department. In exchange for the help the faculty member would donate to the chapter. This year, the executive board made attending a MJMC a part of the Initiation requirements. This gives our new members time to bond with their pledge class, feel connected to the organization, and help the organization gain funds. The department faculty also enjoy hosting the students for these events. One faculty member even made attendees breakfast for dinner. Tasks in this years MJMC’s include moving boxes into a storage unit, sorting old children’s clothes, providing exterior house work, and building shelving units. The attendees raised a total of \$800 for our Keramos Chapter.

B. Educational Outreach

Our objective was to showcase the wide variety of materials that encompass ceramics and to inspire students from all ages in ceramic engineering. The Missouri Chapter of Keramos worked diligently throughout the year to host and provide aid for educational outreach activities.

Demo Trainings

The Materials Science and Engineering department at Missouri S&T has a long history of involving students who are interested in joining the department. In order to keep this tradition going, Keramos members helped train new students on how to perform our materials science demonstrations. These demos cover topics such as glass, metallic materials, and technical ceramics. Over the course of two semesters, Keramos members helped hold three training events where a total of fifteen students were taught how to perform our demos. About two thirds of the students trained have been initiated into Keramos and can now help our department uphold our legacy of providing prospective students a real glimpse into what materials engineers do.

Open Houses

In university open house events for high school students considering attending Missouri S&T, the MSE department hosts departmental visits for students that are interested in materials science. During these open houses there are two ways to interact with prospective students: through our outreach table which allows prospective students to converse with current MSE students and see an overview of materials science, and through the materials science demos performed in our undergraduate labs. A large amount of Keramos members have worked our outreach table throughout the year. These members share their personal accounts to give families an overview of ceramic and metallurgical engineering, department activities, campus life in general as well as answering any questions they might have. This is appreciated by both the prospective students and their families because they are getting a firsthand account of what it is like to be a student both at S&T and in the department. With respect to the materials science demos, our Keramos members worked hard to show how diverse materials engineering can be. It can be estimated that about 50 families attended our demos this year and that Keramos members helped spark interest in upcoming materials engineering students by demonstrating things like how to break tempered glass, how anti-scald shower heads work, and more.

SWE Lock-Ins

Every semester, our Missouri S&T chapter of the Society for Women Engineers hosts a lock-in for female high school upperclassmen to learn more about Missouri S&T and to truly get a feel of what college life can be like. This past year the Missouri Chapter of Keramos members have helped inspire these younger students by not only giving our materials science demos in the lab, but also assisting in giving demonstrations in our foundry and hot glass shop. In the foundry, one of our Keramos members helped educate high school students on how foundries work and participated in a demonstration on how metal is poured. In our hot glass shop, student several Keramos members gave a brief history of glass blowing and also showed the students how glass blowing works. The Keramos



members allowed the students to get involved by letting them pick the next piece of glass they would make.

Upward Bound Students

One of the things that makes the Keramos members at Missouri S&T stand out is their willingness to help teach others about materials science. When our members are given the chance to do outreach for our community, it is very rare that they decline, and it is no different in this case. Our students were requested to give demos in our labs, foundry, and hot glass shops to students of the Upward Bound program. These students come from very rural, low-income areas where very few high school graduates attend college. The students in this program are being taught how to succeed in high school and that college is a real possibility for them, even if money is an issue. Our Keramos members taught them about pouring metal, pouring glass, blowing glass, and more. The students as well as the coordinators of the program were very grateful to Keramos members for helping inspire these students that no matter the obstacles in your way, anything is possible. Additionally, contact information was exchanged between our Herald Olivia and one of the Upward Bound coordinators to begin attempting to organize an event at a college near the students. Our Keramos members would perform demos and talk to families at the college since traveling to Rolla can be complicated for some.



MACURH Conference

While the Missouri Chapter of Keramos members are heavily involved in our Materials Science and Engineering department, they are also involved in a plethora of other organizations. Amber, one of our Keramos initiates from this year, was involved in helping Missouri S&T host the MACURH Regional conference, which is a place for various college's hall government councils to meet together. Amber reached out to Keramos members involved in our glass shop and labs to inquire about giving demos to these other college students. Our Keramos members jumped at the opportunity to teach others, even though the events were held late on a Friday night. At least four of our Keramos members worked to teach students from other colleges about materials science. Our members enjoyed doing these demos because it is not typical to have an audience of college students. This allowed for the Keramos members to be more technical in their



explanations of things, which facilitated some great conversations about materials between students.

STL Science Center Engineering Week

The weekend of February 23rd and 24th Keramos members traveled to St. Louis to participate in the Science Center’s Engineering Week. There, they combined with at least ten of Missouri S&T’s Design teams, as well as other colleges and professional organizations to teach the general public about engineering. Our Keramos members got to teach young kids as well as adults about pulling glass fibers, how atoms are packed, and why tempering aluminum nails is important. The most exciting part of the Science Center demos is that this is where our Keramos chapter got to debut our cotton candy demos, which we were able to perform due to CGIF funding. Our Keramos members made cotton candy for over 100 people while explaining how cotton candy is made and how that relates to fiberglass production. This cotton candy machine helped us attract many families to our table which helped Keramos members enlighten hundreds about ceramic engineering.



STEM Night at Prairie View

As stated above, the Missouri Chapter of Keramos members are willing to go almost anywhere to teach others about ceramic engineering. Two of our Keramos members traveled to and from O’Fallon, MO on a Wednesday night in order to volunteer at an elementary school STEM night. There the Keramos members helped students pull candy “glass” fibers across the gymnasium, showed kids and parents how much force tempered glass can withstand, and how the nitinol wire in braces help straighten out teeth. Overall our Keramos members helped educate over fifty families on various aspects of ceramic and metallurgical engineering.



After School Science Program at Dixon Elementary

The Missouri Chapter of Keramos was contacted by a local elementary school inquiring about our availability to help teach at their after school science program. Our Executive Board quickly indicated that our members were interested and started planning out what we would teach. Our Keramos chapter has volunteered to teach two different topics on two days in mid to late April. Our first topic covers manufacturing of fiber glass where three of our Keramos members will demonstrate how fibers are made. This was done by utilizing our cotton candy machine to simulate fiberglass insulation production, but also by pulling candy “glass” fibers which shows more of the research side of pulling fibers. Our second topic is teaching students about crystalline structures. Our Keramos members plan on teaching the students on how atoms arrange themselves in various ways, then helping those student build structures out of gumdrops. Our Keramos members also plan on helping our Materials Advantage chapter with their topics they will be teaching to the students towards the end of April.



CGIF Demos at NSTA Conference

The Ceramic and Glass Industry Foundation (CGIF) promotes learning about materials science through their materials science classroom kits. CGIF has been attending the National Science Teachers Association (NSTA) conference for the past couple of years and showing teachers how these kits work. This year the conference is being held in St. Louis, so one of our student members and one of our faculty members have volunteered to help CGIF at the conference in mid April. There the two will explain some the science behind the demos in the kit, and even show how some of the demos work. These Keramos members will also be working alongside various members of industry and other students to help encourage teachers to promote materials science in their classrooms!

C. Professional Development

Etiquette Dinners

Each academic year Keramos hosts two etiquette dinners. The purpose of the etiquette dinner is to mimic a formal dining interview and teach how to conduct oneself in this type of situation. Through our sponsors, students are also able to socialize and learn from industry professionals. Both fall and spring etiquette dinners took place at Just A Taste, a local restaurant and wine bar located in St. James, MO. The fall dinner was hosted by Dr. Bill Fahrenholtz and the spring dinner was hosted by Dr. Laura Bartlett. The host is there to guide the students through a presentation of proper etiquette, to offer tips, and of course to add some humor to the event.



The fall etiquette dinner had 70 attendees total. It was sponsored by Kohler Co. who graciously gave \$2500 and brought plenty of door prizes including water bottles and toilet mugs with new fun designs. Three representatives from Kohler - Mitzi Dahlberg, Jeff Mitchell, and Stephanie Soendker - also attended the dinner. Just A Taste prepared a delicious pork loin as a meat option and baked ziti as a vegetarian option, both with delicious sides.

In the spring, Keramos and American Foundry Society (AFS) planned a dinner with 80 attendees and Nucor as the sponsor to the dinner; they graciously agreed for the third year and gave \$3000 in total. Nucor also gave branded drinking glasses out for all attendees to take home with them. We would like to especially thank Gary Pennell, Travis McCarthy, Kim Dyhouse, and Jack Weaver from Nucor for attending.

Lunch and Learns

One of the long-standing traditions within the department is the Keramos Lunch & Learn. Topics for these talks usually revolve around professional development or education, from industry experts talking about their career to students talking about their co-op experiences. Our chapter provides food and reserves a room for the typical 15-30 students that attend.

At the first lunch and learn in August, Keramos hosted a competition overview for the MS&T 2018 conference. Drew Jacobs explained the mug drop, disc golf and student speaking competitions in hopes to gain more participants. While the number of entries did not increase, a few students who attended were instrumental in creating the winning disc. In October, we had two students present on their co-op experience, and a practice run for our MS&T student speaker. In November, we had a talk by Daniel Kruger who is an alumnus of S&T and Electronic Materials Leader at the Honeywell Federal Manufacturing and Technologies center. He helped

explain the context of ceramic and glass materials in electronics, and gave a brief overview of his career progression since his graduation from S&T.

In the spring semester, there were three lunch and learns. Our first was focused on personal and professional branding, and it was given by Teresa Schneider. She focused mainly on how students can market themselves using LinkedIn and other social media platforms. Our second lunch and learn was given in March, and it was presented by three students on their co-op experiences at GE Aviation, Kohler and Owens-Corning. The most recent lunch and learn was given by a previous S&T Keramos president, Steven Ashlock, on the state of the refractories industry and how his company, Kyanite Mining LLC, operates within the industry.



We plan to host one more lunch and learn in May from a member of the PSMRC. While we did not host the President of The American Ceramic Society for a lunch and learn, members of the Keramos E-Board did attend a lunch with Sylvia Johnson before she gave a seminar presentation on the history of thermal protection systems.

Mock Interviews

In order to better prepare the members from the Missouri S&T chapter of Keramos for interviews after the career fair, mock interviews were set up with departmental professors the week before both the spring and fall career fair. A list of behavioral questions and basic interview outline was provided by the executive board. Many professors donated their time and technical knowledge to help prepare for both behavioral and technical interviews with future employers.

Resume Reviews

Two weeks before the career fair, our Keramos Chapter helped to hold resume reviews for members going to the career fair. Members were asked to upload their resumes on a google form where they were reviewed and given critiques by the executive board. This helped many members to refine their resumes for greater success at the career fair.

PCSA

Two students from our Keramos Chapter were chosen to be PCSA delegates for the 2018 MS&T conference. President's Council of Student Advisors (PCSA) to ACerS is a student run organization that is focused on expanding the impact of ACerS within universities across the globe. Danny Drury and Drew Jacobs represented Missouri S&T as undergraduate students. Both students are a part of the External Partnerships committee, which is focused on mentorship of PCSA members, partnering with companies across the globe to support the ACerS mission, and the development of a student competition focused on developing solutions to the 14 Grand

Challenges of Engineering. Both students helped develop the mentorship program and the student competition, expected to unveil at MS&T in 2020.

Graduating with Honors

This is an honor given to the outstanding members of Keramos. Graduating seniors are able to wear blue and gold honor cords at graduation and seniors who receive the graduating with honors distinction also get to wear a Keramos gold pin. Seniors fill out an application and write about the following criteria and how they went above and beyond: departmental activity, professional development, research, and other campus involvement. Any E-Board members who are not graduating evaluate the responses and choose the top candidates as compared to the rest of their class.

Ker-a-bear Mentorship Program

This year, the Missouri S&T chapter of Keramos instituted a new mentorship program for the initiates of each semester. Initiates and willing actives were given a list of mentors and mentees respectively, and gave their top preferences. The E-Board evaluated the responses and matched the mentors and mentees appropriately. Different activities were given to the mentors over the course of the pledging process to encourage a more personalized plan for professional development within the group of initiates. Many of the pairs from the Fall still keep in contact with each other, and the program has received very good reviews from those who participated.

D. Networking Events

Calendar

This year the Missouri S&T Keramos chapter wanted to make sure members and professors could stay involved with what was going on in our organization. A Google calendar was created showcasing all the events, meetings, professional development, and service opportunities that went on throughout the year. The calendar also provided information on events that were going on in the department to help keep Keramos members not only active in the organization, but also within the Materials Science department on our campus. This calendar proved to be a great resource for increasing involvement among members and within the department.

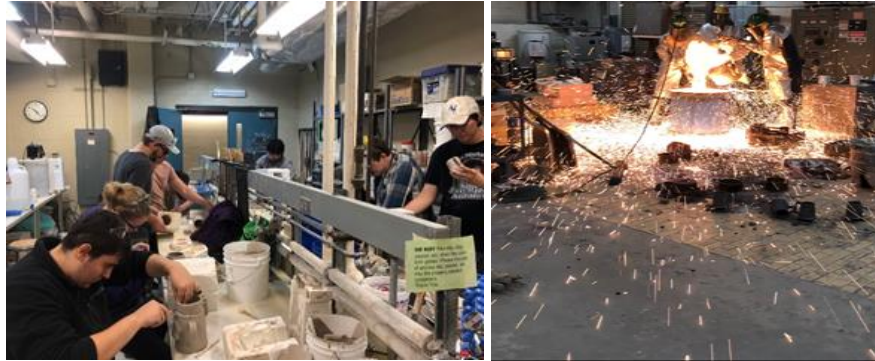
Skeramos

Our chapter decided to continue the Skeramos tradition for the 2nd year in a row on Halloween night. Members bonded through the thrill of a local haunted maze, and then relaxed at our advisor Dr. Smith's house with a scary movie and snacks. Although the event was only attended by 12 students, it was a great opportunity for the initiates to get to know older students within Keramos, and it gave them an opportunity to interact with one of our professors outside of class.

Cross Casting Social

Last year the Missouri Chapter of Keramos and local American Foundry Society (AFS) hosted a cross casting social. The members of Keramos were taught how to pack sand molds and pour molten metal while the AFS members were taught how to slip cast and glaze pieces. This event was very successful so the Executive boards of both organizations worked together to host

this event again! In total there were about five to six Keramos members and about fifteen AFS members who that participated. The Keramos members got the opportunity to pour steel mugs while AFS members got the opportunity to slip cast pieces from tribal masks to large steins.



Department Organizations Social

On May 4th, Keramos plans to host a social with Material Advantage, Gaffers Guild, Alpha Sigma Mu, and Blacksmithing Club from the Materials Science department at Missouri S&T. Keramos will be setting up a picnic and barbeque at Lions Club Park for members to of all departmental clubs to enjoy. There will also be volleyball, frisbee, and other fun outdoor activities for members to enjoy to help relieve some stress and build relationships with other members in the Materials Science department.

What Do You Meme - MSE Edition

On March 7th after the elections for the 2019-2020 officers, the chapter hosted a fun social based on the game What Do You Meme. In the game, players are given 7 cards with fun phrases like “When you peaked in high school” or “When you drop your croissant” and the cards are played to best match certain images. A judge for each round determines what is the funniest. Instead of using the stock photos provided in the game, we used photos of our members from conferences or other department activities and created memes with these. This was a fun way to get to know other members through a lighthearted game focused around the department.

Ke-RAVE-mos

Missouri S&T is well known for the annual best ever St Pat’s celebration. Every organization usually hosts some sort of member gathering during the week, and this year Keramos decided to join the trend. On March 13th, Keramos members were invited to the president’s house for a social with music, games and appetizers to kick off the St Pat’s break that started the next day. About 15 members were in attendance, and although it was publicized as a rave for marketing purposes, it ended up as just a fun, small kickback.

E. Services to the Community

Donations to G.R.A.C.E.

Keramos hosted a canned food drive during the first two weeks of April for the Greater Rolla Area Charitable Enterprise (G.R.A.C.E.), a local charity that provides food and financial assistance to members of the community facing difficulties. The food drive was a competition

between students and professors, where whoever collected the most canned goods would receive an ice cream social in their honor. The students raised over \$100 worth of canned goods, and the professors donated over \$300 in cash, but since the rules stipulate that canned food items must be donated to win, the students came home with the victory.

St. Patrick's School Science Fair

On February 7th, the Missouri S&T chapter of Keramos helped out at the St. Patrick's School Science Fair. This event is held once and year and students from 5th-8th grade put

together poster presentations on a scientific experiment that was conducted by themselves previous months. Our members donated our time to help judge these posters and interact with students on the projects they were recently involved in. Each student was asked a series of questions to help see how well they understood their project and from



these score sheets, winners are decided from each grade level. The help our members provide in judging helps to drastically reduce the time the teachers at St. Patrick's School have to take to accurately grade and judge each project from the four classes.

Spring Banquet

Keramos will organize and host the MSE department banquet on April 18th at Matt's Steakhouse. At the banquet, the department enjoys a tasty buffet and lightheartedly recaps the year with one another. Some of the awards presented are the outstanding undergraduate student, outstanding graduating senior, outstanding graduate student, and outstanding faculty member for both metallurgy and ceramics. An award is also given to a professor who had the largest blunder that year. A student tells the story that recognizes the professor for their error, and presents them with the backside of a horse made out of glazed and fired clay.

F. Alumni Engagement

Alumni Lunch & Learns

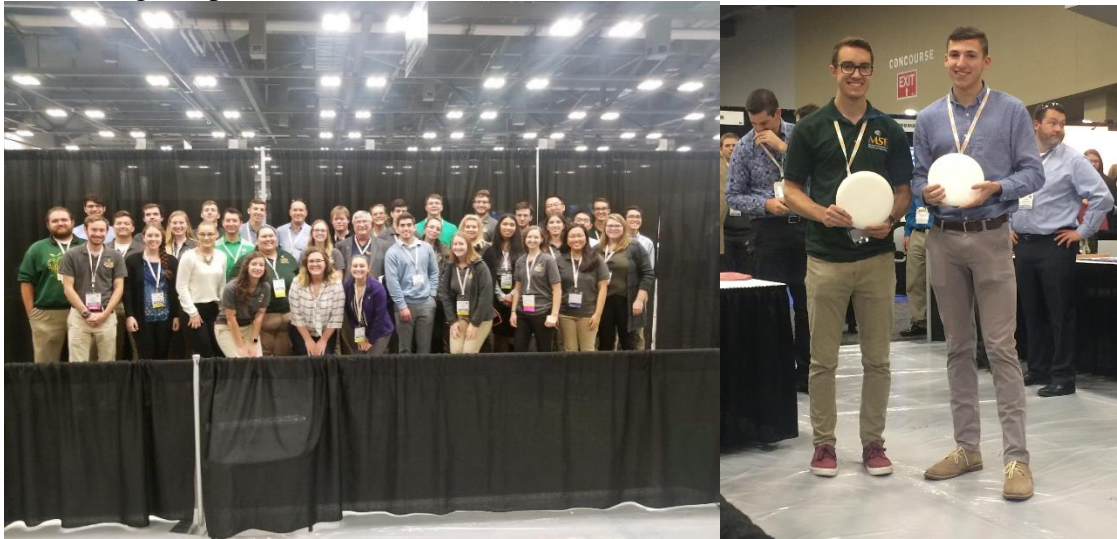
This year, Keramos decided to have one special alumni lunch and learn per semester. This gave students a more personal connection to these industry speakers, and it gave them an opportunity to look at some of the great outcomes for previous Missouri S&T students. In the Fall, the alumni lunch and learn was given by Daniel Krueger, who leads the electronic product center at Honeywell FM&T in Kansas City, MO. His talk revolved around his career history and how it isn't always a clear path to the end goal. In the spring, the alumni speaker was Steven Ashlock, who was also a previous president of Keramos. His talk focused on the state of the refractories industry and what students should consider as they move into the

real world. Both speakers also volunteered their time to speak to students after the event, which was nice for younger members who wanted to make early industry connections.

G. Convocation and Conferences

MS&T 2018

MS&T 2018 took place in Columbus, Ohio this past year. Missouri S&T always sends a large delegation of students, and this year, 45 students were able to attend. Missouri S&T participated in the Student Speaking Competition, the Mug Drop Competition, and the Disc Golf Competition. Austin Sheer participated in the Student Speaking Competition with a talk on kyanite, but did not progress to the final rounds. Olivia Rodell and Amber Meyer submitted tempered glass mugs in the Mug Competition. Amber Meyers' mug broke at a high drop of 120 cm but did not achieve the highest drop this year. Danny Drury won this year's Disc Golf Competition with a distance of 7 m. The Missouri Chapter of Keramos won the Diamond Award and Outstanding Chapter award at convocation.



Keramos Convocation

Keramos Convocation is a chance for all chapters across the country to address the state of the organization. The meeting this year began with a chapter open forum facilitated by the student representative and Missouri Chapter president, Drew Jacobs. Students discussed how their chapters can grow, how to deal with competing organizations like Material Advantage, and what new ideas can be implemented to improve the Keramos experience. This was followed by short presentations given by each chapter to give insight to the activities of the previous year. At the end of the meeting awards were given, and the Missouri Chapter was excited to accept the Diamond Award as well as the James I. Mueller Outstanding Chapter Award. Next semester, our chapter intends to send at least two delegates to convocation, and as of right now Nicole Nulsen and Alissa Reynolds have volunteered to represent Missouri S&T.

Glass Problems

Multiple Keramos members attended the 79th Conference on Glass Problems in Columbus, Ohio. This conference provided members interested in entering the glass industry with invaluable knowledge, experience, and connections. The conference consisted of technical presentations about manufacturing and the future of the glass industry, an exhibition with a multitude of different companies, and evening socials that allowed the students to make vital industry connections. The technical sessions presented students with information on topics ranging from 3D modeling and analysis of the melt and furnace to environmental concerns and reducing emissions to strengthening techniques. These sessions provided students with an encompassing view of what the present-day glass industry looks like and what challenges they will face and be tasked with as they enter the workforce. The students were also paired with an industry mentor for the evening socials who also introduced them to some of their own personal industry contacts, providing an incredible networking opportunity.

The students were also able to tour the local Anchor Hocking plant and encounter glass production in real-time. It was the first real-world glass production experience for many of the students and provided great insight into what a future in the glass production industry may look like. The students also had the extremely fortunate opportunity of touring the plant while one of the furnaces was down and were able to walk around the inside of a glass furnace. It was an opportunity that the students are not likely to ever forget. The Glass Problems Conference was an invaluable experience for Keramos members to build industry connections and learn about the past, present, and future of the glass industry.

American Ceramic Society RCD

Keramos members attended the 55th Annual Symposium on Refractories in St. Louis, MO sponsored by the St. Louis Section and the Refractory Ceramics Division of the American Ceramic Society (ACerS). Of the 235 attendees to the conference, only eight were undergraduate students, and they were all from Missouri S&T. This year’s topic was “Shaped Refractories.” The talks included the history of refractories in Missouri, proper procedure for usage of castable, and attempts to employ the process of slip casting to create magnesia refractories. Professors and industry professionals from all over the world were present and shared their experiences. In the evenings, Keramos members took the opportunity to network with industry representatives and potential employers. Undergraduate attendees were also present for the ASTM and RCD meetings and got an inside look on the proceedings of the organizations.



41st Annual USACA Conference on Composites, Materials, and Structures

Many Keramos students, including three executive board members, were selected to be student pages for this year's USACA conference, which is ITAR restricted. Twelve students from Missouri S&T went overall. As pages, students checked in all participants, worked security for each session, and worked IT for the sessions. The pages also had the opportunity to work the exposition for one night, and the second night they networked with the employers, presenters, and attendees at the conference. It was a great way for our members to gain professional skills and grow their personal networks.



TMS Conference

This year two of our Keramos officers, Drew and Olivia, were asked by a faculty member to organize a team for the TMS Materials Bowl. The two officers quickly found two metallurgical engineering students and submitted a team for the Materials Bowl. March 10th through 12th, the four students traveled to San Antonio, Texas to compete. The four students split up categories to study and all worked together to learn the history of TMS. Their team, "The Miller Indices" fought through adversity and the winner of that round was decided by the final question. While "The Miller Indices" did not advance, all four students enjoyed getting the opportunity to compete in the Materials Bowl, took advantage of getting to connect with students from other universities, and indulged in the ability to transport themselves via electric scooter.



H. External Chapter Communications

President's Visit to Virginia Tech

During Missouri S&T's spring break period, the president of the S&T chapter visited Virginia Tech. While the trip was made for personal reasons, a meeting was organized between the S&T president Drew Jacobs and the VT president Nathan McIlwaine, who met during the MS&T conference in Columbus, OH. Drew provided Nathan with event ideas, fundraising strategies and general chapter operation tips, and also learned about their MSE department through meeting students and faculty and through a campus tour. The relationship between the two chapters was strengthened, and we hope to see the bond grow over the coming years.

National Student Representative

The Keramos National Student Representative is elected every year during the student portion of the Keramos Convocation. The National Student Representative is in charge of organizing the student portion of national conference calls, being a liaison between the student chapters and the National Board, and communicating the best practices of Keramos to the national chapters.

For the 2017-18 school year Drew Jacobs was elected as the National Student Representative and helped continue communication between chapters with the President's GroupMe that was originally created by John Waldo, an alumni from the Missouri S&T Keramos Chapter. The GroupMe was used to continue to share ideas, answer questions, and create stronger relationships between chapters. At the Keramos Convocation at the 2018 MS&T conference in Columbus, another member of our chapter, Kathryn Buscher, was elected as the next National Student Representative for the 2018-2019 school year. So far she has participated in national conference calls and continued communicating with the chapter presidents across the nation. We wish her luck for the remainder of her term.

IX. Keragram Article

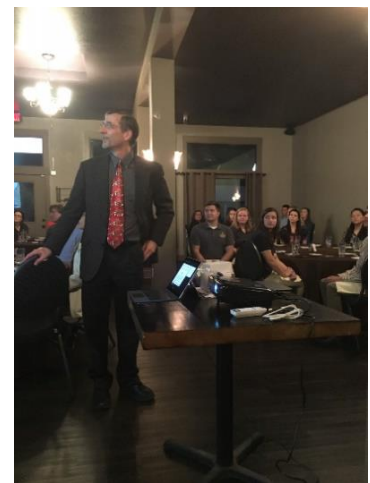
The Missouri Chapter of Keramos has had a very active and productive year. Top priorities this year included improving internal programming and strengthening our connections with industry professionals. As always, we had a large spread of successful events throughout the year.

We held a total of five Lunch and Learns throughout the duration of the year. Two of these focused on returning co-op students sharing their experiences. Other topics included an overview of the MS&T student competitions, professional development, and a talk from Steven Ashlock, a former president of the Missouri Chapter of Keramos. Our Lunch and Learns continue to be a positive connection between Missouri S&T students and professional knowledge.



A major outreach-based undertaking this year was the use of the grant we received from CGIF. We opted to use it to purchase cotton candy machines to use for demonstrations for children of all ages. These demos were centered around educating kids on the industrial process of fiberglass insulation. Members of Keramos took these demos to local schools. Local high schools in Rolla and St. James will receive their own cotton candy machines along with written instructions in order to run their own demos.

The etiquette dinners in both the spring and the fall were also a major success, with both events running at full capacity. The dinner in the fall was sponsored by Kohler and hosted by Dr. Bill Fahrenheitz. This year, the tradition of the American Foundry Society (AFS) planning the spring etiquette dinner was continued, but many Keramos members were still in attendance. The spring etiquette dinner was hosted by Dr. Laura Bartlett and sponsored by Nucor.



We had several fun events both within our chapter and with other organizations. Among these was a Cross Casting Social with AFS where they taught us how to create a mold and cast copper, and Keramos members showed them how to slipcast. Internal events included Skeramos and Ke-RAVE-mos which were celebrations of Halloween and St. Pat's respectively.

We had a very successful year in recruitment, as we initiated a total of 30 undergraduate students and one professor. With our initiates this year, we employed the Kera-Bear mentorship program. Through this program, new initiates were paired with an active member of Keramos and were able to use them as a resource throughout their pledging process. The program proved to be very beneficial and an excellent way to introduce our new initiates into the organization.

X. Executive Summary

This year has been a remarkable one for the Missouri S&T Chapter. Whether fueled by the ever-growing MSE department, or by the impressive work by the Colorado School of Mines chapter, the executive board constantly strived for excellence in every event and activity hosted over both semesters. There was a strong focus this year on membership involvement, which was attained through improved recruitment practices, more active engagement in the pledging process, and improved communication between the executive board and the active members.

The recruiting process was strengthened this year by modernizing the application. Previously, paper applications were handed out in underclassmen classes and collected throughout the week. While this was great for publicizing the organization to younger members, it was easy for these paper applications to be forgotten or left at home. This year, a Google Form was sent out through the department listservs and over class GroupMes, which allowed potential new members to fill out the application at their convenience and in a more streamlined form.

The pledging process was also improved through the implementation of a mentorship program, coined as the Ker-a-bear program. Initiates were assigned an older member within the organization, who was there to assist with the pledging process, career fair prep, and any other questions the initiates had about classes or the department. While some students didn't take full advantage of the program, those who did gave very positive feedback, and we plan to continue and expand the program in the coming years.

Active chapter engagement was encouraged by two methods. The first was to create new fun events and expand existing ones, such as the What Do You Meme social and Skeramos. The second was to make some Keramos events more exclusive to members. While hosting events for anyone in the department to attend is good, it provides less incentive for students to join the organization. In the spring semester, our events were made more exclusive to members and initiates, which resulted in increased participation. I hope that the chapter continues to fine tune the balance between public and private events in the coming semesters.

I have seen excellent growth among the members of this year's executive board. Every member aside from myself had not served on the Keramos E-Board previously, and it was inspiring to watch all of them go above and beyond with their positions. I hope to see continued excellence from this chapter as many of them continue into their final semesters at S&T, and I wish this chapter the best for years to come.



Drew Jacobs

Keramos President 2018 – 2019