

Missouri Chapter of Keramos

2016 Annual Report

Excellence • Scholarship • Tradition

MISSOURI
S&T
University of
Science & Technology

I. Chapter Advisor Report

It is a pleasure to be the faculty advisor for the Missouri chapter of Keramos. I would characterize this year as a transformative year for the Missouri chapter. That is not to say that the Keramos students dropped any of the successful activities initiated in previous years, quite the contrary, as they continued and enhanced all of those events. Instead the transformation has been more in terms of the role Keramos plays in the success of the Materials Science and Engineering Department at Missouri S&T. The Departments of Metallurgical and Ceramic Engineering combined a number of years ago to form our current department and with that came a lot of growing pains and struggles to determine what groups would play what role in the department. This is not an uncommon theme as many (all?) universities are currently wrestling with the same issue. Our Materials Advantage Chapter is strong; our Keramos chapter is strong. What has made this year special is that Keramos, led by a strong executive board, has defined a professional role to support the department and worked hard to make that role visible to everyone involved. Bold and successful implementation of each and every professional activity has increased the attendance at these events and has energized the newer students in the department to want to secure membership and volunteer to assist in Keramos activities. Without doubt, Keramos is the strongest of our student groups, the most visible, the most relied upon and membership in Keramos is the most coveted.

The new executive board will carry on those traditions but will face a couple of difficult challenges; how can Keramos provide more support to the department and how can they handle the increasing number of students seeking membership? As the number of undergraduate ceramic engineering students is on the rise at Missouri S&T, the new executive board will have to address the exclusivity of membership. Currently the Missouri chapter initiates about 25 students annually but the number of students seeking membership continues to increase. There are many benefits to increased numbers and there are many benefits to increased exclusivity. It will be interesting to see how the new executive board addresses this challenge.

The incoming executive board is strong. It is a good mix of experienced leaders and younger students who show great promise for the future. They are excited, they are motivated and 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 2015-2016

II. Annual Plan for Upcoming Year

I am very proud of what growth and development the Missouri chapter of Keramos has shown this past year. From initiating twenty-six new members to attending four materials related conferences, the chapter has kept busy this past year. In the upcoming year I would like to see the number of underclassmen initiates increase as well as an increase in overall member participation. Encouraging new members as well as initiates to volunteer for Miner Jobs for Major Cash, open houses, etc., and to attend Lunch and Learns will be a high priority next year. This year Material Advantage, Keramos, and American Foundry Society had joint meetings every other week. The joint meetings were a success and allowed members to learn about other organizations in the department and helped increase participation in all three groups. The joint meetings will continue next year, as this is a great opportunity to grow each organization and keep members informed with activities happening within the Materials Science and Engineering Department. Encouraging Blacksmithing Club and Gaffer's Guild, two other organizations in the department, to participate in the joint meeting and the creation of a physical monthly calendar in the commons of McNutt (the MSE building) will be early goals of the upcoming school year.

By adding a new outreach program to our current educational outreach efforts, new Keramos members will have an additional activity to participate in as well as practice speaking in front of an audience. Presenting on how material engineering affects everyone to a group of middle or high school students is a good stepping stone to presenting research to a group of peers at conferences. The presentation will be followed with a hands-on activity, such as an egg drop competition where the students have to build a capsule that will protect three hardboiled eggs in successive drops, to have the middle/high school students think like engineers and design and choose material to build their capsule with. The Keramos students can use that as a real life example of how important choice of material is and get kids excited about ceramic engineering.

The Missouri chapter of Keramos has a website, but it has not been updated in recent years. To fix this, a webmaster position or committee will be created in the upcoming year. A functional, up to date website will not only benefit students looking for more information about Keramos, but can be used by alumni to see what their chapter has been up to recently. Orgsync was heavily used this past year for communication with current members as well as to host a centralized calendar of events. While the Orgsync emails were a success, the calendar feature was not as effective. Next year we will move to a Google Calendar synced to everyone's S&T email accounts. This move should increase calendar views as well as allow events to be synced to cellphone calendars.

Elizabeth Robinson

Keramos President – Missouri Chapter 2016-2017

III. List of Officers for Upcoming Year

Name: Elizabeth Robinson Office: President Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Jacob Whanger Office: Herald Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]
Name: John Waldo Office: Vice President Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Dr. Jeff Smith Office: Advisor Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: jsmith@mst.edu
Name: Noor Schoaib Office: Secretary Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Jacob Zorn Office: Historian Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]
Name: Sam Vomund Office: Treasurer Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]	Name: Daniel Drury Office: Nominations Chair Address: [REDACTED] [REDACTED] Phone Number: [REDACTED] E-mail Address: [REDACTED]

IV. List of Active Members

<u>Undergraduate Members</u>		
Anselmo, Nicholas ³	Jarman, Jecce ³	Sattman, Tyler
Baer, Matthew ¹	Johnson, Griffin ⁴	Schneider, Teresa ³
Barber, Evin ⁴	Kent, Andrew ³	Schott, Andrea ¹
Boillat, Rachel	Korklan, Nichole	Scott, Margaret ³

Bretzke, Anna ⁴	Lapeyre, Jonathan ⁴	Schoaib, Noor
Bueltmann, Alexandra ³	Latty, Blake	Schlup, Andrew ⁴
Carder, Nichole	Lawrence, Ben ¹	Showalter, Lucas ²
Chernoff, Aleksander	Linder, Houston ⁴	Snow, Britni ⁴
Cornish, Morgan	Lonergan, Jason	Soendker, Stephanie ¹
Courtney, Emily	Martin, Austin	Stamps, Ransom ³
Cunningham, Ryan ¹	Mattione, Anna ⁴	Stanfield, Austin ⁴
Domann, Kenneth ⁴	McGuire, Aaron ⁴	Steinbach, Derek ³
Drury, Daniel ³	Mitchell, Auben	Valadez, Christopher ³
Dunn, William ³	Miller, Angela ²	Vieth, Angela
Gilfoil, Katherine	Murchie, Alec ^{1,4}	Vomund, Samatha ¹
Gordon, Joseph	Muskovin, Eric ⁴	Walden, Michael ⁴
Grant, Tyler	Musterman, Evan ¹	Waldo, John
Hahn, Michael ³	Pelliccione, Jason ⁴	Wesley, Zoe ³
Hilmas, Ashley ²	Piper, Alexandra ²	Whanger, Jacob
Heywood, Patrick	Purnell, Mallory	Williams, Katrice
Jacobs, Andrew ³	Reynolds, Ethan ¹	Zorn, Jacob
<u>Graduate Members</u>		
Brune, Paul	Kennedy, Sean	Wittmaier, Connor
Ferris, Myranda	Nolte, Elizabeth	Volz, Steven
Grohsmeyer, Ryan	Ronchetto, Erica	
Jarvis, Leiren ¹	Showalter, Lucas ²	

<u>Postdoctoral Fellows</u>		
Dr. Jeremy Watts	Dr. Eric Neuman	
<u>Faculty</u>		
Dr. David Van Aken ¹	Dr. Wayne Huebner	Dr. Mary Reidmeyer
Dr. Richard Brow	Dr. Scott Miller	Dr. Von Richards
Dr. Fatih Dogan	Dr. Mohsen Asle Zaeem	Dr. Mark Schlesinger ¹
Dr. Bill Fahrenholtz	Dr. Matt O’Keefe	Dr. Jeff Smith
Dr. Greg Hilmas	Dr. Ron O’Malley	
<u>Emeritus Faculty</u>		
Dr. Darrel Ownby	Dr. Delbert Day	Dr. Harlan Anderson

Fall 2015 Initiate¹

Fall 2015 Graduate²

Spring 2016 Initiate³

Spring 2016 Graduate⁴

New Members

The Missouri Chapter of Keramos continued to expand this year through recruitment of younger students in both ceramic and metallurgical engineering. We had over fifty applications this year, and the top qualified individuals were selected for initiation into our chapter. Thirteen members were initiated November 19th, 2015 and thirteen members on April 14th, 2016. Two metallurgical students, two metallurgical professors, and four freshmen students were some of the new members of our chapter this year.

The initiation process was approached with a more professional attitude this year. The tasks were the same as years past but now required a higher level of attention to detail, involved more engaging professional development, and had more opportunities for the new members to meet current student and faculty members. The application process was the same as the previous year, with information about the applicant’s interests, campus involvement, and intention for pursuing a membership in Keramos. Their reason for pursuing membership in Keramos is an important part of the application because not only do we want to grow our chapter, but we want to grow leaders.

The newly selected initiates are required to attend an etiquette dinner, make and glaze a plaque, attend the Career Fair, and pass a pledge quiz. The Fall Etiquette Dinner was sponsored by Kohler with Dr. Matt O'Keefe presenting the information on dining etiquette. Dr. Mary Reidmeyer presented during the Spring Etiquette Dinner. Active student and faculty members were seated with the initiates so they had an opportunity to learn more about them as well as Keramos.

The initiates worked on their Keramos plaques during the first few months of the semester. The cobalt doped clay body that was used during the spring of 2015 was used for both semester's plaques. The initiates took the clay and formed their plaque into the Keramos badge shape and used stamps to create the stars and half-moon. They were given the option of using freewriting or using a stamp for the Greek letters spelling Keramos. Just over half of the initiates chose to free write Keramos to give their plaque a sense of individuality. After the plaques were bisque fired, a yellow glaze was used for the impressions from the stamp as well as the border of the plaque. The cobalt clay body did not turn out as deep of a blue as was required, so a blue glaze was applied to the body of the plaque. The initiates had to meet a level of quality during each stage of the plaque making process. This was not an issue as they took pride in their work and strove to produce the best plaque that they could. After the plaques were completed, the initiates gathered the signatures of their pledge class, the executive board, and current members on the back of their plaques. A picture of a plaque from the fall of 2015 initiate class is below.



The initiates are required to attend the Missouri S&T Career Fair which is held once in the fall and once in the spring. This is to promote professional development as the initiates must return a copy of their resume and two business cards received from the Career Fair to the Herald. The business cards show that the initiates have begun to network with professionals and employers in industry.

The final requirement before initiation was to pass the pledge quiz. This was a quiz over the history of Keramos, the history of the Missouri Chapter of Keramos, Material Science and Engineering Department knowledge, and some basic ceramic and material knowledge. The initiates were given a packet of information regarding the founding of Keramos and the Missouri Chapter to study before they took the quiz.

After completion of these tasks, the initiates went through the initiation ceremony. This is a formal, professional event and the initiates and current members were dressed appropriately in business casual attire and the professors donned their caps and gowns. At the conclusion of the ceremony, the faculty members of the Missouri Chapter selected the best plaque. The winner of the best plaque received a Keramos t-shirt. The new members were then treated to a celebratory dinner followed the ceremony.

V. Graduating Members

Fall 2015

Ashley Hilmas Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Alexandra Piper Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Angela Miller Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Lucas Showalter Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]

Spring 2016

Evin Barber Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Aaron McGuire Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Anna Bretzke Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Alec Murchie Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]

Kenneth Domann Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Jason Pelliccione Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Griffin Johnson Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Eric Muskovin Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Jonathan Lapeyre Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Andrew Schlup Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Houston Linder Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Austin Stanfield Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]
Anna Mattione Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]	Michael Walden Address: [REDACTED] [REDACTED] Phone: [REDACTED] E-mail: [REDACTED]

VI. Missouri Chapter Honorary Keramos Nomination



Glen H. Kirby, PhD

The Missouri Chapter of Keramos would like to nominate Dr. Glen H. Kirby as an honorary member in Keramos for the 2015-2016 academic year. Dr. Kirby is a senior engineer in the Materials and Process Development department at GE Aviation in Evendale, Ohio.

Dr. Kirby obtained his BS in Materials Science and Engineering from the University of Tennessee, Knoxville. He went on to obtain his PhD in Materials Science and Engineering from the University of Illinois, Urbana-Champaign, where he investigated colloidal processing of ceramic and cement-based material systems. Prior to joining GE Aviation, Dr. Kirby developed ceramic materials and coatings for advanced battery, fuel cell, and turbine engine applications as a post-doctoral associate at the Oak Ridge National Laboratory. In his early career at GE Aviation, Dr. Kirby was the principle investigator for environmental barrier coating (EBC) development where he invented a slurry process for depositing EBC's on ceramic matrix composite (CMC) airfoils. Currently, Dr. Kirby is the principle investigator for next-generation coatings and composite materials intended for advanced commercial and military aircraft engine applications. In total, Dr. Kirby has over 20 years of experience in ceramic materials technology development, with more than 10 peer-reviewed papers and over 20 patents.

Dr. Kirby has been an outstanding mentor to several Missouri S&T chapter Keramos students who have participated in co-ops and internships at GE Aviation. He is always willing to sit down with the interns and discuss the technical details of ceramics used in turbine engines, and guide them with their projects. We believe that because of his vast contributions to the use of ceramics in advanced commercial and military aircraft engine applications, and his willingness to help guide the next generation of ceramic engineers, Glen Kirby more than qualifies to become an honorary member of the Keramos Fraternity.

VII. Treasurer's Report

Two spreadsheets are shown below of our fiscal activity for the year. The first describes our activity in our bank account for both semesters as well as expected revenue/expenditures after this report. Important note is that the last section is of expected expenses or expenses budgeted during the final report writing. These estimates, except for the deposit, are based off previous amounts from this year or previous years or limits set by the chapter.

Bank Account Records

Items Finalized from Spring Semester, 2015					
Date	Description	Debit	Credit	Subtotal	Total
2/20/15	Hats Payment	\$ (260.00)	\$ -	\$ (260.00)	\$ 936.26
4/16/15	After Initiation @ Alex's Pizza (1)	\$ (384.84)	\$ -	\$ (384.84)	\$ 551.42
4/24/15	Food for Grilling Walmart	\$ (93.14)	\$ -	\$ (93.14)	\$ 458.28
5/15/15	Anna M. Food Monies	\$ (51.68)	\$ -	\$ (51.68)	\$ 406.60
6/4/15	Houston Deposit	\$ -	\$ 75.00	\$ 75.00	\$ 481.60
6/14/15	Andrew Schlup Payment	\$ (29.37)	\$ -	\$ (29.37)	\$ 452.23
Fall Semester, 2015					
Date	Description	Debit	Credit	Subtotal	Total
9/7/15	Cash & Check Deposit	\$ -	\$ 40.00	\$ 40.00	\$ 492.23
9/7/15	Payment Padfolios	\$ (490.44)	\$ -	\$ (490.44)	\$ 1.79
9/23/15	MJMC Hilmas Lawnwork	\$ -	\$ 400.00	\$ 400.00	\$ 401.79
9/28/15	Payment Jon Lapeyre	\$ (3.39)	\$ -	\$ (3.39)	\$ 398.40
9/28/15	Deposit from Cashbag	\$ -	\$ 300.00	\$ 300.00	\$ 698.40
10/2/15	Deposit from Cashbag	\$ -	\$ 500.00	\$ 500.00	\$ 1,198.40
10/14/15	Deposit from Cashbag	\$ -	\$ 500.00	\$ 500.00	\$ 1,698.40
10/15/15	Reimbursement for MS&T Conference	\$ (310.00)	\$ -	\$ (310.00)	\$ 1,388.40
11/19/15	After Initiation @ Alex's Pizza (2)	\$ (574.31)	\$ -	\$ (574.31)	\$ 814.09
11/23/15	MJMC Smith Leaves	\$ -	\$ 250.00	\$ 250.00	\$ 1,064.09
11/28/15	Resupply of Checks	\$ (12.50)	\$ -	\$ (12.50)	\$ 1,051.59
12/4/15	MJMC O'Malley	\$ -	\$ 300.00	\$ 300.00	\$ 1,351.59

Spring Semester, 2016

Date	Description	Debit	Credit	Subtotal	Total
1/12/16	Payment for T-Shirts	\$ (256.40)	\$ -	\$ (256.40)	\$ 818.19
2/4/16	Remaining Payment Polos	\$ (232.07)	\$ -	\$ (232.07)	\$ 586.12
2/16/2016	Deposit from Cashbag	\$ -	\$ 500.00	\$ 500.00	\$ 1,086.12
	Check from Paul B	\$ -	\$ 30.00	\$ 30.00	\$ 1,116.12
3/9/16	E-Dinner Keramos Plates	\$ (34.57)	\$ -	\$ (34.57)	\$ 1,081.55
3/21/16	Reimbursement from Kohler Co.*	\$ -	\$ 1,694.00	\$ 1,694.00	\$ 2,775.55
	Donation #1 Keragram	\$ -	\$ 25.00	\$ 25.00	\$ 2,800.55
	Donation #2 Keragram	\$ -	\$ 510.00	\$ 510.00	\$ 3,310.55
3/21/16	Payment to MSE Department	\$ (1,694.00)	\$ -	\$ (1,694.00)	\$ 1,616.55
4/11/16	Donation #3 Keragram	\$ -	\$ 110.00	\$ 110.00	\$ 1,726.55
4/11/16	Keragram Donation to Nationals	\$ (30.00)	\$ -	\$ (30.00)	\$ 1,696.55
4/12/16	Initiates National Dues	\$ (130.00)		\$ (130.00)	\$ 1,566.55

Expected Revenue/Expenditures after Report†

Date	Description	Debit	Credit	Subtotal	Total
4/12/16	Etiquette Dinner		\$ (500.00)		
4/14/16	Deposit from Cashbag‡	\$ 1,000.00			
4/14/16	After Initiation @ Alex's Pizza (3)		\$ (400.00)		
4/19/16	Department Banquet		\$ (1,500.00)		
4/21/16	Travel Assistance Dr. Kirby		\$ (500.00)		
4/23/16	MJMC Event	\$ 233.33			
Subtotal		\$ 1,233.33	\$ (2,900.00)		\$ (1,696.55)
Total					\$ 29.88

Cash Bag Records

Fall Semester, 2015					
Date	Description	Debit	Credit	Sub Total	Total
Date	Description	Debit	Credit	Sub Total	Total
8/21/15	First Cash Check	\$ -	\$ -	\$ -	\$ 182.71
9/7/15	Deposit for Padfolios	\$ (30.00)	\$ -	\$ (30.00)	\$ 152.71
9/14/15	Exec Board Dues	\$ -	\$ 50.00	\$ 50.00	\$ 202.71
9/21/15	Changed Dues to \$15	\$ -	\$ 25.00	\$ 25.00	\$ 227.71
9/22/15	Dues and Padfolio Purchase	\$ -	\$ 30.00	\$ 30.00	\$ 257.71
		\$ -	\$ 75.00	\$ 75.00	\$ 332.71
9/24/15	Padfolio Purchase (2)	\$ -	\$ 30.00	\$ 30.00	\$ 362.71
9/25/15	Padfolio Purchase (3&4)	\$ -	\$ 15.00	\$ 15.00	\$ 377.71
		\$ -	\$ 150.00	\$ 150.00	\$ 527.71
9/28/15	Cash Deposit	\$ (300.00)	\$ -	\$ (300.00)	\$ 227.71
9/30/15	Padfolio Purchase (5)	\$ -	\$ 15.00	\$ 15.00	\$ 242.71
10/1/15	Padfolio & Dues (2)	\$ -	\$ 315.00	\$ 315.00	\$ 557.71
		\$ -	\$ 75.00	\$ 75.00	\$ 632.71
		\$ -	\$ 60.00	\$ 60.00	\$ 692.71
		\$ -	\$ 45.00	\$ 45.00	\$ 737.71
10/2/15	Cash Deposit	\$ (500.00)	\$ -	\$ (500.00)	\$ 237.71
10/2/15	Checks Miswritten	\$ (45.00)	\$ -	\$ (45.00)	\$ 192.71
10/7/15	Cash Dues & Padfolios	\$ -	\$ 45.00	\$ 45.00	\$ 237.71
10/12/15	MS&T Checks & Luke V Rewrite	\$ -	\$ 500.00	\$ 500.00	\$ 737.71
10/14/15	Deposit Checks	\$ (500.00)	\$ -	\$ (500.00)	\$ 237.71
10/6/15	Pizza Initiate	\$ (31.45)	\$ -	\$ (31.45)	\$ 206.26
10/19/15	Checks Reworded	\$ -	\$ 30.00	\$ 30.00	\$ 236.26
10/23/15	MJMC Smith	\$ -	\$ 250.00	\$ 250.00	\$ 486.26
10/23/15	Deposit MJMC Smith	\$ (250.00)	\$ -	\$ (250.00)	\$ 236.26
11/11/15	Bowling Night	\$ (110.25)	\$ -	\$ (110.25)	\$ 126.01
11/16/15	Andrew Schlup Disc Golf	\$ -	\$ 50.00	\$ 50.00	\$ 176.01
11/17/15	MJMC O'Malley	\$ -	\$ 300.00	\$ 300.00	\$ 476.01
11/18/15	Domino's Pizza Quiz	\$ (30.00)	\$ -	\$ (30.00)	\$ 446.01
11/30/15	Alex's Pizza Monies	\$ -	\$ 130.00	\$ 130.00	\$ 576.01
12/4/15	Deposit MJMC O'Malley	\$ (300.00)	\$ -	\$ (300.00)	\$ 276.01

Spring Semester, 2016					
Date	Description	Debit	Credit	Sub Total	Total
1/26/16	Calum Learn Hat Money	\$ -	\$ 15.00	\$ 15.00	\$ 291.01
2/4/16	T-Shirt Monies	\$ -	\$ 180.00	\$ 180.00	\$ 471.01
2/11/16	T-Shirt & Polo Sale (1)	\$ -	\$ 235.00	\$ 235.00	\$ 706.01
2/15/16	Paul Brune Check	\$ -	\$ 30.00	\$ 30.00	\$ 736.01
2/16/16	Cash and Check Deposit	\$ (560.00)	\$ -	\$ (560.00)	\$ 176.01
2/24/16	Little Caesar's LnL	\$ (71.66)	\$ -	\$ (71.66)	\$ 104.35
2/24/16	Polo & Shirt Sale (2)	\$ -	\$ 30.00	\$ 30.00	\$ 134.35
3/1/16	Polo & Shirt Sale (3)	\$ -	\$ 40.00	\$ 40.00	\$ 174.35
3/2/16	Initiation Quiz Little Caesar's	\$ (29.86)	\$ -	\$ (29.86)	\$ 144.49
3/10/16	The Zone Roller-skating**	\$ (4.30)	\$ -	\$ (4.30)	\$ 140.19
3/14/16	Banquet Money	\$ -	\$ 550.00	\$ 550.00	\$ 690.19
3/24/16	Little Caesar's Joint Meeting AFS/MA	\$ (71.66)	\$ -	\$ (71.66)	\$ 618.53
4/7/16	LnL Kevin Fox Little Caesar's Pizza	\$ (71.66)	\$ -	\$ (71.66)	\$ 546.87
4/11/16	Etiquette Dinner Payment	\$ -	\$ 140.00	\$ 140.00	\$ 686.87
4/12/16	Banquet Money and Polo Sale	\$ -	\$ 65.00	\$ 65.00	\$ 751.87
4/12/16	Banquet Money	\$ -	\$ 420.00	\$ 420.00	\$ 1,171.87
4/12/16	Cash Bag Deposit	\$ (1,000.00)	\$ -	\$ (1,000.00)	\$ 171.87

VIII. Chapter Activities

A. *Fundraising*

Miner Jobs for Major Cash

Beginning in the fall of 2014, the chapter began a program called Miner Jobs for Major Cash, in which members of the chapter organize and conduct a project for professors in the department in return for a donation from that faculty member. That project was continued with great success in the 2015-16 school year. In the fall of 2015, three projects were conducted, resulting in a total of \$850 of donations.

Item Sales

One of the goals for the executive board was to use the excess money carried over from the previous semester to buy merchandise for fundraising. The first fundraising project was a

revamping of the padfolio fundraiser used in previous years. The padfolios were sold at a slight profit, and popular with student attending the career fairs at Missouri S&T. Of the 50 padfolios ordered, only 15 remain.



In tradition with past fundraising, the chapter decided to design a t-shirt as well as a polo for the upcoming semester. The “Ceramist” t-shirt was originally designed by Austin Martin, previous Vice President, and it is a big hit with the MSE department.



In addition, a lot of the Keramos members were impressed with the use of the Keramos crest by the Illinois chapter which inspired the use of the crest on a polo. This will help expand the Keramos visibility in the department as well as campus. To promote sales, a discount was applied if a t-shirt and a polo was bought together. This helped mitigate the cost of the polos which were rather expensive since only 19 were ordered. They did turn out very well though! A sign-up list was used to gauge interest for both shirts but there were a lot of students interested in buying that did not sign up or knew about the orders. Finally after talking to some alumni as well as the responses from the Keragram, it could be beneficial to explore marketing towards recent graduates and alumni which could bring extra donations and interest in our chapter.



B. Educational Outreach

Open House

Over the course of the year the materials department has several open house events for high-school students and their parents to tour the department and ask questions. Keramos sends many members to help as tour guides, run materials demonstrations, and answer questions about the ceramic engineering discipline.

WYSE Academic Challenge

The Worldwide Youth in Science and Engineering competition is a major academic event for high school students in Missouri. Each spring, the competition culminates in the State Finals, which are held at Missouri S&T under the direction of Dr. Bill Fahrenholtz, a Curator's Professor of Ceramic Engineering. Keramos members of the Missouri chapter have a long tradition of volunteering to help manage the event and to act as proctors for exams in the competition.

Boy Scout Merit Badge University

The Boy Scouts of America in Missouri organizes events called Merit Badge Universities where scouts attend particular university campus where each scout chooses a merit badge to earn that day. The materials department at Missouri S&T offers the Composite Materials merit badge under the direction of Dr. Wayne Huebner, professor of ceramic engineering. This event depends on the efforts of several Keramos members who assist the scouts with the main project of the badge, the reinforcing of a model Styrofoam airplane with tissue paper in order to increase tensile strength. These students often answer questions scouts have about the field of materials.

Materials Camp

On the week of July 26th, 2015 the Materials Department Missouri S&T held its annual ASM Materials Camp for high-school aged students interested in metallurgy and ceramics. The camp included laboratory visits for student run demonstrations and industry visits. The high temperature ceramics demos were run Keramos members Paul Brune and Ryan Grohsmeyer and included demonstrations of thermal shock and conductivity. The participants also were split up into groups to participate in laboratory experiments. One such group was shown how to make silica “space shuttle tile” material by the same members.

St. Patrick's School Science Fair

On February 18th, several Keramos members and other materials engineering students volunteered with judging at the annual St. Patrick School Science Fair. This fun event included students between 5th and 8th grade at the local grade school presenting and being judged on their science projects. The kids’ projects included simple experiments such as observing the effect that mass of a projectile had on the distance it would travel when launched via catapult, or which fruit would power a clock for the longest amount of time. Each grade school student was required to present a poster outlining their science project and be judged by five separate people.

Dr. Richard Brow was the faculty member who reached out towards the students of the materials department, asking for volunteers to help judge at this awesome event. The volunteering Keramos members and other materials engineering students had a great time interacting with the younger students, giving them meaningful advice on how to improve their projects, and encouraging them to get excited about and pursue science.

Jackling Institute

The Jackling Introduction to Engineering camp is held three times annually in the summer semester. This week-long camp is typically geared towards junior and senior high-school students who have shown an interest in engineering. Students are asked to pick two engineering disciplines to learn about during the camp. Those who chose ceramics were given a tour of the laboratories and were shown demonstrations of different fields in the discipline. Keramos members were among those giving the demonstrations in glass science and high temperature ceramics. The Jackling camp also includes a question and answer session with a panel populated by current Missouri S&T students, including several Keramos members.

Space Week

Keramos sponsored a lecture during the speaker series of the 2nd Annual Missouri S&T Space Week. Dr. Greg Hilmas presented on Heat, Space, and the Final Frontier: Ultra High Temperature Ceramics in the Aerospace Industry. There were 127 attendees, including undergraduate and graduate students across all of the engineering disciplines.

C. Professional Development

Fall Etiquette Dinner

The Missouri chapter of Keramos holds two etiquette dinners each academic year, one each semester. The dinner serves to instruct students on proper dining manners, for use in the job interview process. The dinner during the fall of 2015 included a presentation by Dr. O'Keefe, a professor of metallurgical engineering.

The fall etiquette dinner is one of the largest professional activities conducted by the chapter. It serves as a networking opportunity for younger members to meet upperclassmen, graduate students, and faculty members, who are dispersed among the tables evenly. Students seeking initiation into Keramos are required to attend an etiquette dinner. Students are encouraged to engage in small talk and to offer toasts if appropriate. The event is a light-hearted but effective method of instilling professional behavior in a dining setting. The fall etiquette dinner was sponsored by Kohler and was attended by Kohler employee Penny Forton as well as Missouri students Jacob Whanger and Emily Courtney, who interned for Kohler at the time.

Spring Etiquette Dinner

Keramos hosted a second smaller Keramos Etiquette Dinner on April 11th. This dinner was very similar to the one held in November, and was namely for the spring Keramos pledge class to attend as part of their initiation. Dr. Mary Reidmeyer agreed to give the etiquette presentation, and did a fantastic job. At the end of the evening, she was awarded with a plate with the Keramos emblem as a token of our gratitude.



Lunch and Learns

Beginning in the fall of 2013, the Missouri chapter began a monthly program called "Lunch and Learns", in which a materials-related presentation is given while lunch is served. The presentations range from a Missouri S&T student presenting on work they did on campus or on an internship to a professional from academia or industry presenting on their career and research. The first Lunch and Learn of the year in September of 2015 featured presentations by Keramos officers in the style of the Student Speaking Competition at the MS&T Conference. In November, student Ryland Forsythe presented his research on graphene substrates for future applications.

In October of 2015, Saint-Gobain gave a Lunch and Learn about technical ceramics. The presenters included alumni of Missouri S&T who did research on solid oxide fuel cells while attending Missouri S&T. A Lunch and Learn was conducted in April of 2016 featuring Dr. Kevin Fox of Savannah River National Laboratory and Keramos National President. The presentations this year were attended by many students and faculty of ceramic and metallurgical background.

Graduating with Honors

This honor is awarded to the most dedicated members of Keramos based on a weighted point system that measured their activity in the Ceramic field and professional development. Students who meet the criteria (listed below) are awarded a certificate and a Keramos pin at the Spring Banquet. They will also be allowed to wear honor cords at graduation.

- (i) Departmental Activity: Involvement in student groups such as Keramos, Material Advantage, etc.; serving as an officer of said organization; involvement with recruitment for the department.
- (ii) Professional Development: Participation in etiquette dinners; participation in research on/off campus; working as intern or co-op student; presentation for a seminar, lunch and learn, or to a class; poster presentation of research/job completed; attendance at a national conference
- (iii) Other Campus Involvement: Other student groups involved with on campus; serving as an officer of said organization.

D. Networking Events

In addition to offering opportunities for professional development within the department, a large focus is also placed on developing relationships and connection within the student body of Keramos. Activities such as bowling, trivia, and skating nights help to alleviate much of the stress from a busy student lifestyle while also introducing students to other fellow students that they may not have met otherwise.

Events held are also not exclusively for Keramos members; Joint events between various student groups foster a community for students in the entire department and university. Near the end of the spring semester, a barbeque was held at a local park by the Missouri chapter, Material Advantage, and the student microgravity research design team, Miners in Space.

E. Services to the Community

Canned Food Drive

Each fall, the Missouri Chapter helps administrate a canned food drive in the Materials Department. The drive is a competition between the students of ceramic engineering and metallurgical engineering. This year, the ceramic students narrowly beat the metallurgical students, and the competition was great fun for all involved.



Senior Send-off Dinner

Before commencement each spring, the materials organizations sponsor a dinner in honor of students who are graduating. This dinner is also attended by faculty and underclassmen to congratulate and bid farewell to the graduates.

Spring Banquet

Each spring the chapter helps organize and host an annual Spring Banquet for the department. The Banquet, which will be held this year on April 19th, celebrates the accomplishments of the faculty and students throughout the year in a fun, relaxing atmosphere. Outstanding Student Awards are presented during the evening to a graduate student, graduating senior, and undergraduate from metallurgical and ceramic programs. Awards will also be given to outstanding faculty and staff members in the department.

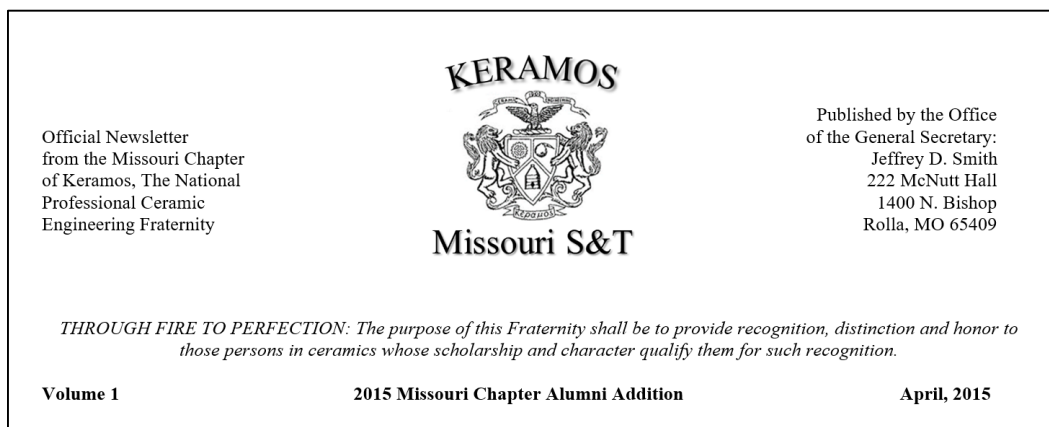
F. Alumni Engagement

Professional Networking

The Missouri Chapter has one program in each of the fall and spring semesters before the campus-wide career fairs to help connect students to potential employers. In the fall semester, a picnic is held at Lions Club Park. Any employer hiring students in ceramic or metallurgical engineering are invited to attend. The picnic kicks off with a friendly softball game, followed by a barbeque and potluck, with many faculty and staff providing dishes. Later in the spring, a similar event is held on the Missouri campus. Despite the smaller size of the spring career fair relative to the fall career fair, many materials-related employers attend the Spring Dinner. The dinner is catered by Lee's Chicken, and like the Fall Picnic, serves to connect students with potential employers in an informal setting.

Missouri Chapter Keragram

This year the Missouri Chapter issued its first local Keragram to all known alumni and active members. The front page contained an address from the department chair at the time, Dr. Wayne Huebner. The newsletter is used to update members and alumni about the events of the past year. The last page can be returned with updated contact information, a note to the chapter, an optional donation, and even a section for paying national dues. Since the date of issuing, three alumni have paid dues to nationals through the Missouri Chapter and the chapter has raised \$625 in donations. The donations fund the next year's Keragram and help support chapter activities.



G. Convocation and Conferences

MS&T Conference

Each fall, the Materials Science and Technology Conference brings together thousands of students, faculty, and industrial representatives in the materials field. Students have the opportunity to participate in competitions, to attend technical presentations, and to build their network of contacts in the field. The conference in the fall of 2015 was held in Columbus, Ohio, and was attended by over 30 students from Missouri S&T.

This year the Missouri chapter was well-represented in the student competitions, presentations, and scholarships. Andrew Schlup from the Missouri Chapter tied for first place in the Disc Golf Competition, and Michael Walden took second place in the Student Speaking Competition. Derek King and Leiren Jarvis, graduate members of the Missouri Chapter, presented at the conference. At the ACerS Award Banquet, Michael Walden received the Du-Co Ceramics Scholarship Award, and Missouri alumnus Geoff Brennecka received the Du-Co Ceramics Young Professional Award. At the TMS Award Banquet, Anna Bretzke, a metallurgical engineer in the Missouri Chapter, received the William Park Woodside Founder's Scholarship.

Annual Convocation

At the MS&T Conference, the National Convocation is held. The Convocation is attended by representatives from the Keramos Chapters and by the national officers. At the meeting, students discuss challenges their chapters face and present new practices their chapter have implemented in the past year. Each year a Career Speaker is invited to speak at the convocation. In 2015, this speaker was Susan Trolier-McKinstry of Penn State. Elections of national officers and amendment of the by-laws take place as necessary. At the Convocation, awards for the chapters are presented. In 2015, the Missouri Chapter was honored to receive the Diamond Award for High Achievement and the Most Outstanding Chapter Award.

Glass Problems Conference

In November of 2015, 18 Missouri students attended the 76th Conference on Glass Problems, held in Columbus, Ohio. This conference is similar to the MS&T Conference in format, but has a much greater focus on industry and is specific to the fields of glass and refractories. Many students were able to network with potential employers or sponsors of their senior design projects. The conference included a plant tour at the Anchor-Hocking facility in Lancaster, Ohio.

TMS Conference

In February of 2016, four students from the Missouri Chapter attended the 145th TMS Conference in Nashville, Tennessee. The conference began with a fierce trivia competition in which the Missouri Chapter placed second. The rest of the week consisted of technical presentations and networking with students of other universities.

H. Inter-Chapter Communications

The Missouri Chapter has greatly benefitted from interfacing with the other Keramos chapters over the past year. Many opportunities, including the National Convocation, the monthly teleconferences, and many national conferences have allowed the chapter to network with students from across the nation as well as to share best practices with other chapters.

The issue addressed most frequently between chapters is that of recruitment of young undergraduates and maintaining member participation. At the National Convocation, many strategies such as mentorship programs and socials for freshmen in the department were proposed to resolve this issue. Throughout the academic year, the chapters kept each other apprised via the monthly teleconferences of the efficacy of these strategies. The Missouri Chapter has greatly benefitted from this discussion, and continues to see strong involvement from undergraduates and graduate students across the board.

One change the Missouri Chapter has seen in the last year is the role national conferences can have in fostering inter-chapter dialogue. Students from Missouri have talked with universities such as Colorado School of Mines or the University of Utah that have a Material Advantage chapter but not a Keramos chapter, and have discussed the benefits of having both programs. Many alumni of Missouri S&T, such as Jake Ivy at CSM, continue their efforts at expanding Keramos into such universities as graduate students. In future years, the Missouri Chapter hopes to continue using national conferences to work one-on-one with students from other universities to promote the ideals and honored traditions of Keramos.

IX. Executive Summary

The 2015-16 period was a banner year for the Missouri Chapter of Keramos. The successes of the chapter in recent years meant that expectations were high. As the Materials Science and Engineering Department at Missouri S&T continues to grow, the chapter was expected to grow as well. As the standards set for student achievement continue to grow, the chapter needed to support the professional and academic development of students like never before. Each of these challenges the chapter faced over the last year were met and overcome with great success.

The strength of the Missouri Chapter ultimately rests in our members, meaning initiation of new members each semester is one of our highest priorities. For the third consecutive year there was such a high demand for membership in Keramos that one initiation was held each semester. The number of initiates also grew over the last year, and the chapter grew not only in terms of undergraduate members but also in terms of graduate student and faculty members as well. Despite the increasing scope of initiation, both inductions over the past year were conducted in an exceptionally efficient and professional manner.

With greater membership comes greater participation in activities. This means that every Lunch and Learn, every networking event, every outreach event, and so forth is increasingly taxing on the chapter's budget. Fortunately, the chapter was able to scale up its fundraising efforts over the past year to accommodate this need. The Miner Jobs for Major Cash initiative started during the 2014-15 school year was continued with great success. In addition, the Chapter Keragram started during the same period yielded promising returns that demonstrate its utility in supporting not only the chapter but also Keramos Nationals, through the payment of dues of Missouri alumni. The chapter also used the sale of a materials-themed t-shirt, a Keramos polo, and Materials Science & Engineering padfolios to support our activities this past year.

An important part of the chapter's professional development activities is the Lunch and Learn program, which continued this year with great success. This program gives students glimpses into the work of professionals from industry, researchers from academia, and both undergraduate and graduate students here at Missouri S&T. These seminars also promote participation in presentations at conferences, such as the Student Speaking Competition at the MS&T Conference. Each semester, the Missouri Chapter also hosts etiquette dinners, which serve to instruct students on proper conduct at the dinners that are often a part of the interview process. In recent years, these dinners have become increasingly important, as initiates each semester are required to attend the dinner, and the involvement of faculty has also increased.

The Missouri Chapter has increased its presence on the national stage over the past year. In addition to the MS&T Conference attended by Missouri students each fall, representatives from the chapter also attended the Conference on Glass Problems and the TMS Exhibition over the past year. These conferences provided the opportunity to network with students from several universities that may not typically attend the MS&T conference. One such university was Colorado School of Mines, where several graduate students originally from the Missouri Chapter are currently working to establish a new Keramos chapter. This broadening of the focus of the chapter in the past year in an exciting change that will hopefully continue, especially with the locations of the 2016 MS&T Conference in Salt Lake City and the 2017 TMS Conference in San Diego.

In summary, the Missouri Chapter of Keramos has continued its tradition of exemplary student involvement and professional growth. The chapter is larger than ever before and more active than ever before. It remains a powerful force at Missouri S&T and has a growing presence on the national stage as well. The future of the chapter grows brighter each day as the next academic year approaches, and once again the chapter has an outstanding board of incoming officers prepared to continue the long-standing tradition of excellence of our fraternity.

Michael Walden

Keramos President – Missouri Chapter 2015-2016