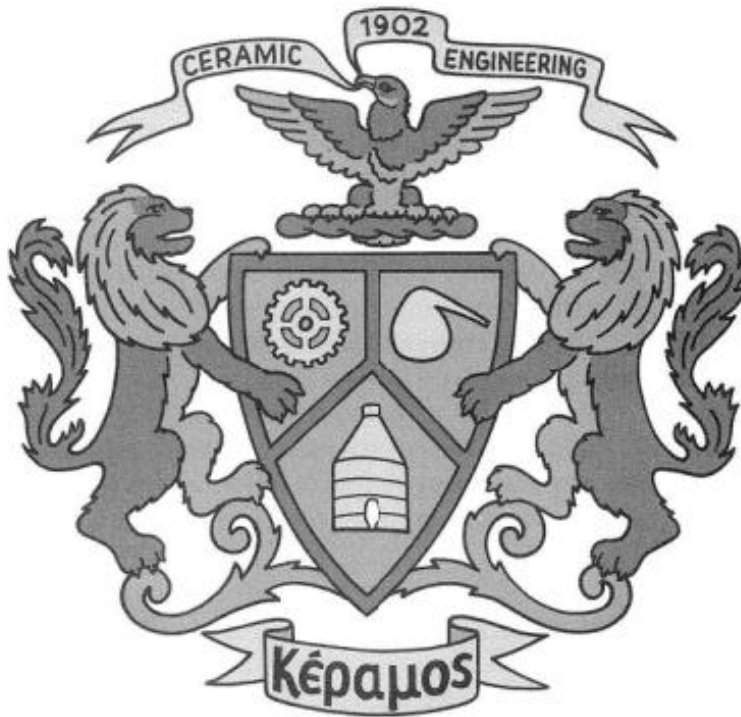




The University of Arizona Chapter of Keramos

2014-2015 Annual Report



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1. Chapter Adviser Executive Summary

The Keramos Chapter at the University of Arizona had a remarkable 2014-2015 academic year. The Keramos officers continued to focus on fundraising, outreach, and growth. Keramos activities and the willingness of the members to be active and involved, especially in recruiting activities, has been duly noted by the departmental administration and by professors in the Department of Materials Science and Engineering. The organization held early election of officers to ensure smooth transitions and continuity when the current officers graduate. The overlap of governance has improved the efficiency of the organization.

The chapter's outreach activities have been especially broad-ranging, with a strategy of interacting with several age groups to educate students and to promote materials science and engineering as a possible major. Given the large percentage of incoming high school students who have never heard of MSE as a possible career path, these outreach activities have had a particularly large impact. In coordination with our local chapter of Material Advantage, the chapter engaged with students at local elementary schools, middle schools, and high schools to educate them about what the field has to offer. Additionally, the chapter works closely with MSE faculty to assist in on-campus outreach activities such as the annual Meet Your Major fair, the freshman engineering Open House for engineering majors who have not chosen a specific engineering discipline, and other activities intended to increase the visibility of the major within the campus community. Most of these outreach activities have involved hands-on materials interactions with new materials engineered in the department or with traditional technologies, such as casting and glass blowing. The consequence of these active outreach and recruiting activities is that undergraduate enrollment in MSE is now 87 students.

This ever-increasing enrollment is leading to growing ranks among our chapter of Keramos. In our most recent induction, we added many new members. The chapter also continued its participation in the annual MS&T conference and the Mug Drop competition and other activities that build a network of student interactions that will lead to camaraderie as postgraduates. We intend to send members again this year. Two of our students also gave papers in a special symposium in the new Art, Archaeology and Materials Science division. Thus, the University of Arizona Chapter is in an excellent position, and I look forward in the coming year to further assist the chapter in my role as Faculty Advisor.

Prof. Pamela B. Vandiver
Department of Materials Science and Engineering
Co-Director, Program in Heritage Conservation Science
University of Arizona

2. Annual Plan for the Upcoming Academic Year

2.1. Goals

Serving the community has always been the ultimate goal of the University of Arizona chapter of Keramos and also its continuation. As members graduate and go on to different parts of their life, new members will revitalize and continue the professional development and scholarship of students here at the University of Arizona.

Another goal of our chapter is attendance at the national chapter meeting. The previous year's funding was secured through the university's ASUA organization, which helps fund student organizations for such events. Other funding came from the Engineering Student Council and fundraising events conducted throughout the year. We sent ten members to last year's MS&T, and we hope to send even more students to this year's conference.

Outreach and community involvement are key components of our mission. We perform an increasing number of intercollegiate and high school outreach events, one side effect of which is a continuing rapid increase in the number of students joining the MSE program here at the University of Arizona. We would like to make outreach a higher priority for this coming year.

As new members are inducted and senior members relinquish their roles as officers, there is a constant need to teach and initiate new leaders to ensure continuity. We had a transitional dinner between the old and new officers, where the newly elected officers were able to sit down with their predecessor and learn about their new position and what their job entails. This helped ensure they are up-to-date and ready to perform their duties with minimal down-time, thereby increasing the efficiency of the entire organization.

2.2. Points System

To promote club participation and reward graduating seniors for their service to Keramos, a "point system" was established in Fall 2014. Point values determined by the time-commitment for respective social, fundraising, and general body meeting events will go towards the student member's club standing, which in turn will determine what type of graduation regalia they may receive. The responsibility of maintaining the participation point spreadsheet was that of the secretary, who normally keeps track of meeting attendance and is best suited for the job. There will be two standings:

- Excellent Standing: average plus one standard deviation of all active members' (at least 5 meetings attended) participation points for the fall and spring semester
 - Those with excellent standing will be eligible to purchase a blue/gold cord as graduation regalia
- Good Standing: average of all active members participation points for the fall and spring semesters.
 - Those who earn good standing will be eligible to purchase a gold cord for graduation regalia
- Students who cannot attend club meetings must notify the secretary and they will not be able to attend club meetings. To earn participation points for missed meetings, the

meeting minutes sent out after general body meetings must be read and confirmed by secretary through email notification.

2.3. MS&T

MS&T is one of the most looked-forward-to events that Keramos participates in. It is an indispensable way for students to see cutting-edge MSE research and to network with the materials community from both academic and industrial backgrounds. Last year, we sent ten students, and we plan on sending quite a few more to MS&T in Columbus, Ohio, this year. This interest in attending MS&T has driven us to find different ways in finding funding. We are planning on participating in the Mug Drop again this year and hopefully the Disc Golf competition as well. Our chapter participated in the Mug Drop a few years ago and we would like to start that back up again.

Funding for travel has been found from the University of Arizona's ASUA which is a student organization dedicated towards funding student clubs for events such as these. This funding has significantly helped our last trip but was not enough. The generous funding received at MS&T 2014 at the national Keramos chapter convocation helped one more member attend the conference. Also, one member was the Student Representative on the national Keramos Board of Directors and was given the amount of one plane ticket, which was greatly appreciated. Additional funding for MS&T 2014 was provided by University of Arizona's Engineering Student Council (ESC). We plan to continue our participation in the council for the upcoming academic year and seek out their funding for MS&T 2015. Also, fundraising events such as selling handmade glass flowers helped. Accommodations for MS&T were done three months in advance, which proved useful in preparing to navigate public transportation and other logistical details. And for this year, our chapter is planning on creating an MS&T student committee of students who are definitely going to the conference. They will be in charge of organizing the trip, ensuring that we receive funding from as many places as there are available, and making sure that we are on schedule with making the competition items.

3. List of Officers, Delegates, and Alternates for the Coming Academic Year

This past year, our chapter created three new officer positions in order to help keep the club more organized. The new positions were: Webmaster, Event Coordinator, and Engineering Student Council (ESC) Representative. Creating these positions proved to be greatly beneficial and helped to spread the amount of work evenly among the officers. Note: Event Coordinator has been changed to Event Chair so as to reduce the amount of work done by one single individual.

Table 1: Officer Elections in Spring 2015

Position	Name	Email	Phone	Address
President	Kyle Jakes	[REDACTED]	[REDACTED]	[REDACTED]
Vice-President	Kristi Farell	[REDACTED]	[REDACTED]	[REDACTED]
Secretary	Sean Arnold	[REDACTED]	[REDACTED]	[REDACTED]
Treasurer	Ben Geller	[REDACTED]	[REDACTED]	[REDACTED]
Herald	April Proft	[REDACTED]	[REDACTED]	[REDACTED]
Webmaster	Kati Alcantara	[REDACTED]	[REDACTED]	[REDACTED]
Event Coordinator	Zack Fortuno	[REDACTED]	[REDACTED]	[REDACTED]
ESC Rep	Austin Lancaster	[REDACTED]	[REDACTED]	[REDACTED]

4. List of Active Members

Our chapter has about 51 active members in total. This number includes three faculty members and 48 student members, and of those, seven were newly initiated into our chapter. Furthermore, our chapter's activities routinely include the University of Arizona Material Advantage chapter as well, resulting in participation by non-members in many club activities.

Table 2: Officers, Delegates, and Alternates

Name	Title	Other
Dr. Pamela Vandiver	Chapter Adviser	
Dr. Erica Corral	Faculty Member	
Dr. B. G. Potter	Faculty Member	
Kati Alcantara	Webmaster	Delegate
Crispyn Aldridge		
Jennie Allred		
Sean Arnold	Secretary	Delegate
Kurumi Austin		
Rachel Barnitt		
Ian Buterbaugh		
Caleb Canchola*		
Max Duffy		
Teri Elwood		Delegate
Kristi Farrell	Vice-President	
Asher Fishgold*		
Grayson Fleming		
Zackary Fortuno	Event Chair	Delegate
Eric Gabriel		
Ben Geller*	Treasurer	Delegate
Diane Haiber		
Ivy Hasman		
Samuel Hudson		
Kyle Jakes	President	Delegate
Neil Jenkins		
Wilson Kong		
Austin Lancaster	ESC Rep	
Emily Leones		
Cole Lumsden*		
Kayli McArthur		Delegate
Angelin McCormack		
Don Nguyen		Delegate
Kyle Nguyen*		Delegate
Nicole Oliver		

Alec "AJ" Olson		
Josh Owl		
Alex Pagano		
Magnum Pina*		Delegate
April Proft	Herald	Delegate
Taylor Rhoades		Delegate
Liam Richards		
Ariel Rieffer		
Kira Rundel		
Brian Swartwout		
Christopher "Chris" Tursi		
Dan Tuttle		
Josh Vita		
Jianyang Wang		
Moses Wangusi*		
Yusuke Watanabe		
Erik Wise		
Luke Wohlford		

*Was inducted on April 1, 2015

5. Treasurer's Report

There has been several different spending ventures this year. We have invested in chairs and tables for tabling on the mall, with the goal of being reimbursed by the Materials Science and Engineering Department.

The treasurer is responsible for keeping records of all finances and making purchases the club needs, unless otherwise delegated to another member.

MS&T participants were able to be fully reimbursed through the different funds given by ASUA and other grant funds.

Table 3: Transactions for the past Academic Year

Date	Transaction	Deposits	Withdraws
04/06/15	Cash Deposit (Transition Dinner Payments and things)	206	
04/02/15	Recurring transfer	100	
04/01/15	Recurring transfer		100
03/31/15	Monthly Service Fee		12
03/31/15	Transition Dinner (Sauce)		205.2
03/30/15	Michael's Store - Dinner Decorations		15.06
03/30/15	Michael's Store - Dinner Decorations		12.95
03/30/15	Graduation Regalia		165
03/26/15	Cash Deposit (Glass Flowers and things)	320	

03/16/15	MS&T Reimbursement		590.44
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		656.74
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		657.75
03/13/15	MS&T Reimbursement		590.44
03/12/15	MS&T Reimbursement		657.75
03/12/15	MS&T Reimbursement		63.44
03/12/15	U of A Reimbursement	2458.78	
03/09/15	ONLINE DEP DETAIL & IMAGES		3
03/02/15	Recurring transfer		100
03/02/15	Recurring transfer	100	
02/27/15	Monthly Service Fee		12
02/10/15	Walmart - Chairs and Table		82.85
02/10/15	Walmart - Vase for Glass Flowers		4.29
02/06/15	CVS		6.39
02/05/15	U of A Reimbursement	2458.78	
02/02/15	Recurring transfer		100
02/02/15	Recurring transfer	100	
01/30/15	Monthly Service Fee		12
01/02/15	Recurring transfer		100
01/02/15	Recurring transfer	100	
12/31/14	Monthly Service Fee		12
12/10/14	Safeway		1.99
12/10/14	Safeway		39.87
12/08/14	ESC- Prize Money	10	
12/03/14	Alexander Pagano - Supplies Reimbursement		93.28
12/02/14	Recurring transfer	100	
12/01/14	Recurring transfer		100
11/28/14	Monthly Service Fee		12
11/21/14	Safeway - Liquid Nitrogen Demos?		
11/19/14	ESC - Club Funding	100	
11/03/14	Keramos - Student Rep Travel	415	
11/03/14	Keramos - MST '14 Reimbursement	415	
10/31/14	Monthly Service Fee		12
10/09/14	ESC- Prize Money	30	
09/30/14	Monthly Service Fee		12
09/19/14	Staples Supplies		71.64
08/29/14	Monthly Service Fee		12
		6913.56	7802.83

Started with	Spent	Ending Balance
1594.68	-889.27	705.41

6. Chapter Activities

The following events and activities are listed in order of when they occurred, from the first event of the fall semester to the most recent.

6.1. Student Club Showcase

The Engineering Student Council hosted an event for new freshmen to see the many student engineering clubs available. Keramos shared a table with Material Advantage and represented both clubs as well as the MSE department.

6.2. Meet Your Major Fair

The University of Arizona hosted an event for students to see the different majors available at the university and gain more knowledge on majors that they are interested in possibly pursuing. Keramos and Material Advantage represented the MSE department, and in turn mentioned both clubs in order to gain interest.

6.3. MS&T 2014

At this past MS&T, ten students were able to attend the conference, the most we have ever sent. On the Sunday before the conference, the President, Secretary, and Herald attended the Keramos Annual Convocation and Business Meeting where they reported to the other chapters and the national Board of Directors about our chapter's activities over the past year since the last MS&T. Also at the meeting, our chapter was awarded the Sapphire Award for High Achievement. We have won this award in previous years and bought a plaque to proudly display our slowly-growing collection of awards.

Later on during the conference, our chapter participated in the Mug Drop competition. We submitted two mugs, which both survived the first drop-height, but then broke at the second drop-height. While we did not win, it was a fun experience and we are planning on participating again at MS&T 2015.



Figure 1: The students who attended MS&T made numerous connections with fellow student club members from other chapters across the U.S.

6.4. Industry Tour

Our chapter got into contact with a Keramos alumni who graduated last year and was currently working. He was gracious enough to set up a tour date for our chapter of the facility, Universal Laser Systems, up in Phoenix, Arizona. Seven students attended the tour and were able to learn about that line of work and how it fits into industry. The students really enjoyed the tour and as a result, our chapter is planning on getting the post-graduation contact information of MSE seniors who are graduating this year. That way the chapter will have industry contacts for future industry tours.

6.5. ENGR 102 Open House

A total of four students helped two new MSE Department professors and our chapter's Adviser with demonstrations ranging from levitating a magnet over a superconductor, glass blowing, and several other demonstrations. A total of about 90 undeclared engineering freshmen students attended the open house in order to gain a better understanding of MSE as a potential education and career path.

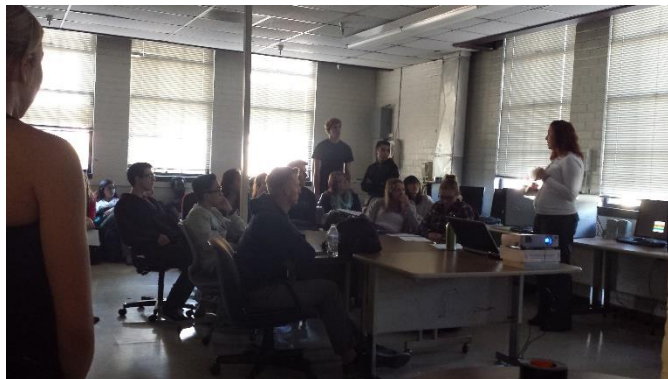


Figure 2: Dr. Erin Ratcliff and Dr. Nick Swintek, MSE faculty members, talked to over 90 students to recruit for the MSE department.

6.6. Math/Science at Whitmore Elementary

Our chapter was invited to participate in an outreach event hosted by Whitmore Elementary School to promote math and science among a younger crowd, to increase interest in those topics at a young age.



Figure 3: Volunteers demonstrated how air-filled balloons shrink when placed into liquid nitrogen.

6.7. Liquid Nitrogen Break Stuff Night

Our chapter's annual tradition held on the last day of classes during the spring semester where students can relieve stress before final exams. At the event, a collection of items and fruit are frozen with liquid nitrogen and shattered within a contained area. Ice cream is made with the liquid nitrogen as well.

6.8. Bi-monthly Social Events

As a new tradition, our chapter has established that we will host a social event every two weeks for the student members. This is to create a stronger connection between members and strengthen the club as a whole.



Figure 4: Over 15 students attended our Potluck, one of the many social events hosted for the student members.

6.9. ALE/YLF Outreach Event

An event hosted by the Society of Hispanic Professional Engineers (SHPE) every year, Keramos and Material Advantage were invited to participate this year again. Our chapter performed materials science demonstrations for over 200 high school seniors interested in attending a four-year university and pursuing a degree in science, engineering, technology, or math.

6.10. Fundraising

6.10.1. Glass Flowers Sale

This fundraising event consisted of selling student-made glass flowers during Valentine's Day. The outcome was a profit of about \$320. The flowers were made from a borosilicate base and incorporated coloring for an additional fee. The popularity of the event came from the unique, affordable idea and the considerable amount of promotion due to catering to a predictable demand. For hours students worked hard at making the flowers in having them be a sign of love and care between people at a reasonable cost. This event also provided the opportunity for students that do not have experience working with glass a chance to learn hands on.



Figure 5: Dr. Pam Vandiver, MSE faculty member, came in and taught multiple students how to make glass flowers.



Figure 6: About 15 flowers were sold during the week of Valentine's Day.

6.11. eWeek 2015: Egg Drop Competition

This year our chapter participated in the College of Engineering's eWeek activities by hosting an egg drop competition again. Hosting this event increased the presence of our chapter in the engineering community on campus. This event provided the students from other clubs the opportunity to interact with one another through friendly competition.



Figure 7: Students were given a minimal amount of supplies that they could use to make their container.

7. Summary

At the University of Arizona, the Keramos student chapter has continued to make an impact on campus and to the local community through outreach events. By incorporating faculty into our approach, freshman students at the UA have become more attracted to our major, which has increased enrollment even more than last year. At the College of Engineering Open House night, students who visited the Materials Science and Engineering department were in for a treat—they had the opportunity to watch a superconductor in action and allowing students to interact with ferrofluids was an inspiring experience for all.

Within the MSE department at the UA, Keramos teamed up with the UA Materials Advantage chapter to host the first ever “Liquid Nitrogen Break Stuff Night”. Just before finals, students were able to de-stress by flash-freezing objects followed by (safely) smashing them, making homemade liquid nitrogen ice cream, and socializing with fellow students. The event was a great success and will be carried out every semester as a new club tradition. Additionally, Keramos and MA continued fundraising by selling student-made borosilicate glass flowers on Valentine’s Day.

Our webpage, keramos.arizona.edu, is an especially great way to learn more about the UA Keramos chapter. There are sections focusing on our travels to MS&T, outreach activities, a calendar of events, professional resources, and contacts of all our officers.