

*Chapter of Excellence Report for
Material Advantage
California State Polytechnic University,
Pomona*



Dr. Vilupanur Ravi (Faculty Advisor)

Ho Lun Chan (President)

Isabella Chu (Vice President)

Rogine Gomez (Secretary)

Ahmon Brooks-Starks (Treasurer)

Hooman Kasraei (Outreach Chair)

Chi Ying Loh (E-council Representative)





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During the 2018-2019 school year, the **Material Advantage (MA)** student chapter at **Cal Poly Pomona (CPP)** set forth with one goal: to revitalize student interest in the field of material science and provided a strong foundation of knowledge and development to lead a success career. In this academic year, our focus was to **promote involvement and opportunities for the next generation of materials scientists and engineers**

With strong leadership, driven board members, and the help and guidance of our advisor, Dr. Vilupanur Ravi, **MA – CPP chapter** has prospered in this academic year. Through a variety of activities, including invited professional talks, workshops, K-12 outreach events and social activities organized by **MA**, the student community has grown large enough to **win the Most Students Recruited Award in the Fall Membership Challenge**.

The **MA – CPP chapter** continues to adapt to the needs of campus community by developing a strong relationship and line of communication with members, board officers, on- and off- campus entities. These include the other campus clubs, Cal Poly Pomona Office of Undergraduate Research, ASM LA chapter, AIST Southern California chapter. The **MA – CPP chapter** is now proudly 91 students strong, and with a 130% increase in membership. The comprehensive overview of **MA** accomplishments for 2018-2019 provided in the sections below describe the solid foundation for which **MA – CPP chapter** will continue to support the material science community, one where students can take an active role in the growth of their future career.

Meet the Chapter



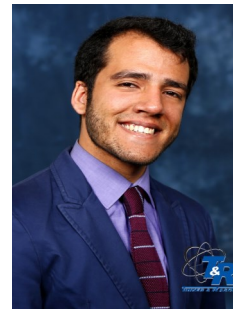
Faculty Advisor: Dr. Vilupanur Ravi



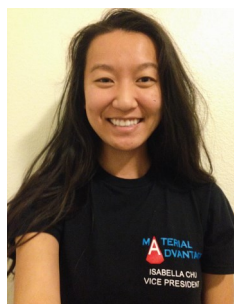
President, Ho Lun Chan



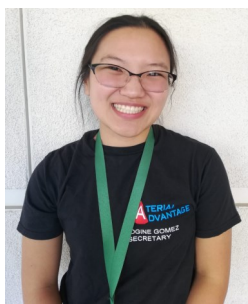
Treasurer: Ahmon Brooks-Starks



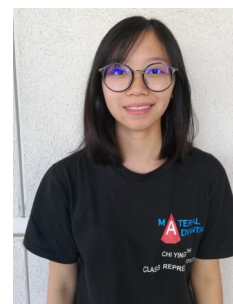
Outreach Chair: Hooman Kasraei



Vice President: Isabella Chu



Secretary: Rogine Gomez



Representative: Chi Ying Loh



Statistic of Membership

91 On-Campus Members
9 Different Majors
130% Growth

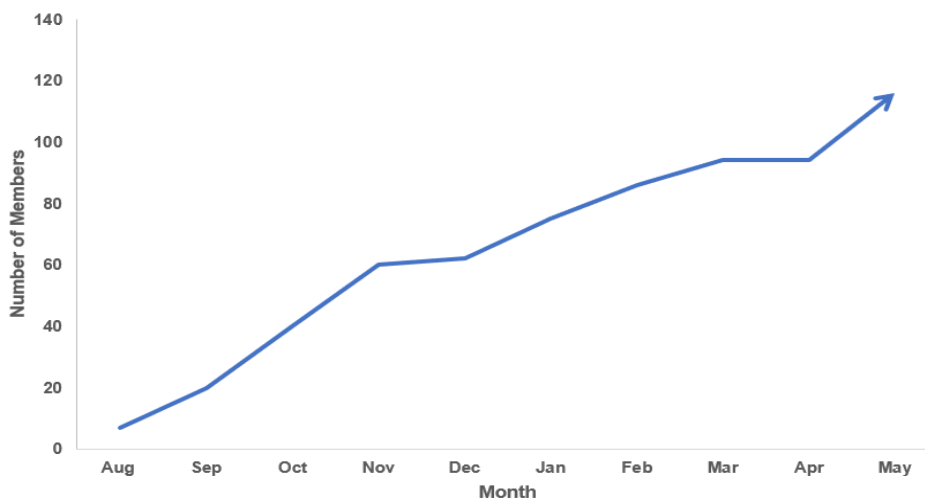


Figure 1. Number of signed-up members in 2018-2019

The **MA – CPP chapter** has a steady and fast-growing membership in this academic year. As of the date of report submission, we have 91 student members. 30 among 91 are paid members of Material Advantage. We have attracted a diverse group of students with majors ranging from business administration to chemical engineering. We have learned that the success of membership is to host events that cover a broad range of interests, e.g. career workshop, social, and develop a strong platform of communication through our website, social media, and displays of flyers. It was also of our honor to be recognized by the Most Membership Recruited Award in Fall.

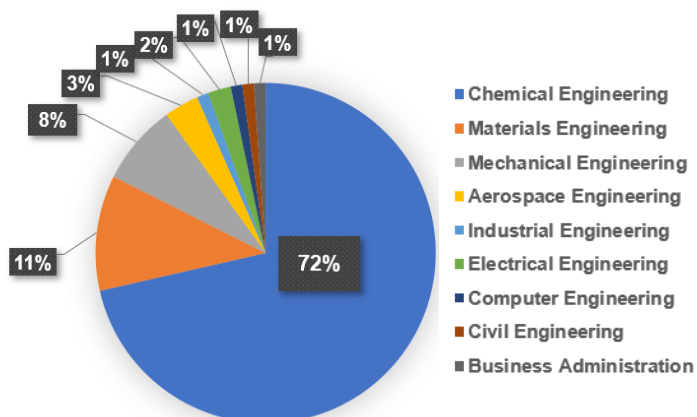


Figure 2. Members divided by majors.

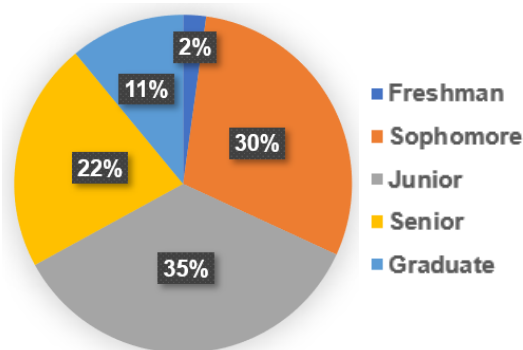


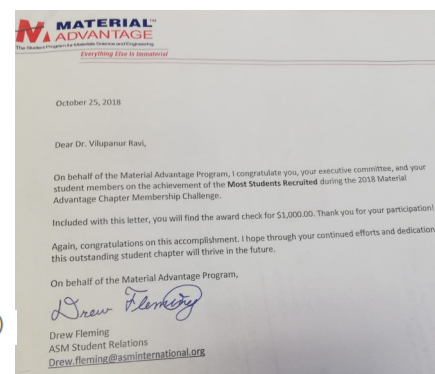
Figure 3. Members divided by class.

Most Membership Recruited Award



Fall Membership Challenge

- Most Students Recruited (\$1000 prize) – California State Polytechnic University, Pomona (130% growth)





This year, **CPP Material Advantage** invited **5 visitors** to share their knowledge with our student community. These talks were successfully hosted with a total attendance of **350 students**. These guests have research and industry experiences in biomedical, aerospace, transportation, and manufacturing industries. The goal of these visits is to educate our members of limitless opportunities available in the field of materials. This also provides them an insight on what the daily life of a materials engineer is like. This is a platform for them to ask questions, make networking connections, and discover new potential career paths.

Academic and Industry visits are planned thoroughly by board members to ensure that our guests feel comfortable and welcomed by the university. A lab tour is usually conducted to give them an insight on the work **CPP** students are doing. Through this, the guests gain a better understanding of the university motto, **“Learn by doing,”** through undergraduate research experience. **CPP MA** aims to establish meaningful relationships with our guests to ensure for their return in the future as well as secure networking connections for our members who may be interested in reaching out to them.

Dr. T.S. Sampath Kumar

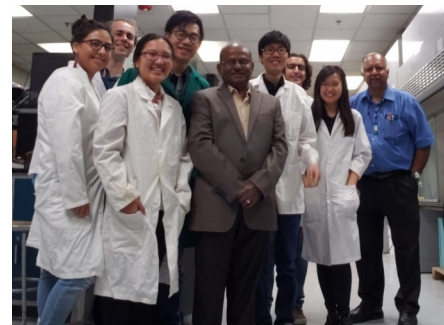
Professor, Department of Metallurgical and Materials Engineering at Indian Institute of Technology Madras

“Multifunctional Calcium Phosphate Nanocarriers for Management of (Bone) Infections”

“Nanostructured Metallic Implants with Enhanced Biofunctionalization”

Dr. Kumar’s research interest is focused on the role of materials in biomedical applications to enhance functions like drug delivery, tissue regeneration, infection management, etc. His two presentations focused on the role of nanomaterials in biomedical implants.

A combined total of over 150 students attended his presentations on October 19, 2018.



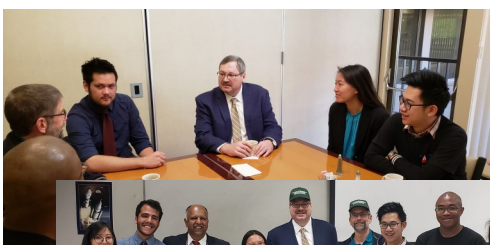
Dr. David Furrer

Senior Fellow Discipline Lead for Materials and Processes Engineering, Pratt & Whitney
President, ASM International

“Materials Modeling and the Future of Structural Alloy Design and Application”

Dr. Furrer presented on the utilization of computational materials engineering for modelling tools to meet the specifications of design and function of materials for various desired applications. Additionally, he also had the opportunity to interact with students and impart wisdom on how to become effective engineers in the future.

Over 60 students and faculty alike attended his presentation on November 27, 2018.





Kristen Hammer

Materials Engineering Manager, Virgin Hyperloop One

“The Future is Now: Fastest Virgin Hyperloop One”

Virgin Hyperloop One has the mission to revolutionize transportation by implementing advanced technology to reduce the time and cost of travel. Hammer discussed the development, construction, and testing of the first working prototype and how its continued success can be attributed to the new materials developed for this project. Her goal is to select materials that can withstand any circumstances the system might face while running.

Over 80 students and faculty from the physics, chemical engineering, and aerospace engineering attended her presentation on May 10, 2019.



American Iron & Steel Technology

John Marsh, President of AIST Southern California Chapter

Jay Strowger, Vice President of AIST Southern California Chapter

Steven Bunch, Secretary of AIST Southern California Chapter

“Student Steels Opportunity”

AIST is one of the partner societies of **Material Advantage**, and it is the leading networking and educational organization for the continuous advancement of the steel industry. Three representatives from the AIST Southern California Chapter (Marsh, Stowger, and Bunch) presented on the opportunities available on the steel industry and ways students can start their professional careers by being members of AIST.

Over 30 students attended their presentation on May 17, 2019.



ERG Materials & Aerospace Corporation

Jake Puppo, Project Engineer at ERG

Denver Schaffarzick, Engineering Director at ERG

“ERG Materials and Aerospace Corporation”

ERG Materials & Aerospace Corporation is the sole manufacturer of open-cell, solid ligament Duocel foam for aerospace, transportation, and defense applications. Puppo and Schaffarzick presented on the growing industry of metallic foam and the limitless possibilities it offers for different industries. Metallic foams serve as a solution for applications that require light weight and strength, and these properties are what drive the growing market for this particular material.

Over 30 students attended their presentation on May 20, 2019.





Undergraduate Research Grant Competition aka “Shark Tank Competition”



In collaboration with the **ASM Los Angeles Chapter**, **CPP Material Advantage** hosted an Undergraduate Research Grant Competition, similar to the show *Shark Tank*. Participants were undergraduate research students who presented their projects in front of industry professionals to compete for a \$1,000 project sponsorship.

This is the first ever collaboration between ASM— Los Angeles Chapter and Material Advantage — Cal Poly Pomona Chapter.

We had the honor of inviting current board executives from the local and national chapter of ASM International to be the judges for this year’s competition (**Dr. David Furrer & Dr. Michael Hahn**). To participate in this competition, students need to be a paid **Material Advantage** member with undergraduate standing who are conducting research in materials science and engineering.

Through this event, the officers from the **CPP MA** chapter have also developed a stronger and better collaborative relationship with local materials engineering societies, such as ASM—Los Angeles chapter.



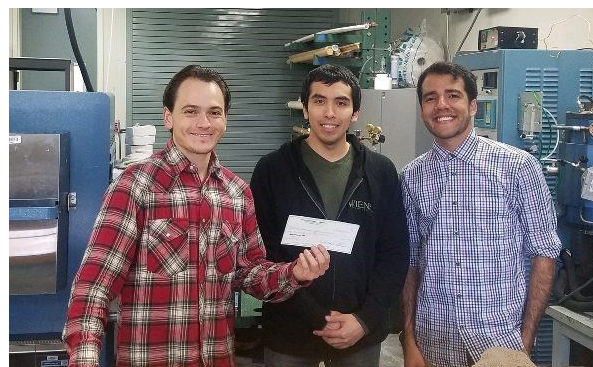
Competition participants giving Dr. Furrer and Dr. Hahn a tour of their work area



Competition participants were recognized during the ASM LA Chapter November Meeting.



This year’s winning group is **Spencer Swartzbaugh, Josh Diaz and Hooman Kasraei** from **California State Polytechnic University, Pomona** for their composite research mentored by Dr. Vilupanur Ravi. This group was recognized at the November ASM Industry night and was awarded **\$1000** to be used for their project.





Material Advantage – Cal Poly Pomona chapter members were given guidance from experienced interns and members from professional societies on research and future career goals. ASM LA Chapter Undergraduate Research Grant Competition was pronounced by the ASM president Dr. David Furrer huge success in this regard.

Internship Panel in Materials Science and Engineering

On October 16, 2018 **CPP Material Advantage** held a workshop where students share their previous experience at either a industry internship or REU and the differences between the two, Free Boba was provided curtesy of AIST through the Pizza grant.



ASM Los Angeles Chapter Industry Meetings

Establishing a mutual beneficial connection with the local chapters, such as ASM LA chapter, was a priority for this year. Members were sent to monthly industry meetings hosted by ASM Los Angeles chapter. Officers also volunteered to participate in local executive meetings to collaborate with the chapter and fulfill commons goals. Such collaborations led to the creation of programs, such as the ASM Research Grant Competition. Future priorities including constructing similar relationships with the remaining societies and progress has already been made for AIST.





First General Meeting

CPP Material Advantage believes that the best way to start the year is an effective first general meeting. We shared the benefits of joining the local and national chapter of **MA**, and the events we have planned for the year. We shared the many ways they can contact us and how they can get updates about the club. Our goal is to maintain a transparent and accessible relationship with each and every one of our members to maintain student engagement and participation.



CPP MA board members presented the benefits of joining MA and how one can keep updated for future events



CPP MA board members (Left) with Representative of Congresswoman Norma Torres (Right 1) and Ms. Yolanda Natividad from Acers (Right 2)

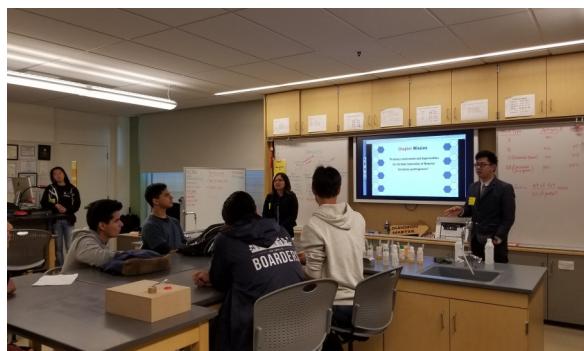
Material Advantage Congressional Visit Day

CPP Material Advantage board members had the opportunity to connect with their congress representatives to advocate the importance of material science. The series of lectures outreach activities have made us aware of the importance of materials engineering to our economy. The event offered us an opportunity to get connected to **MA** chapters across the nation. We will surely take advantage of the next year CVD with a bigger size of officer attendees.

International Polytechnic High School

CPP Material Advantage has visited International Polytechnic (IPOLY) High School on May 21st, 2019. The objective of visiting IPOLY was to inform high school students about the presence of materials science as a vital and interdisciplinary area of study, and to educate them the opportunities and resources available for them.

The officers have presented the current and future activities where high school students could participate. Over 20 students attended the IPOLY High School outreach event. Through this event, potential collaboration to host activities, e.g. materials trivia, were also discussed.



Freshmen Engineering Council Outreach

The Engineering Freshman Council at Cal Poly Pomona organized an even that invited students from local high schools to visit CPP and meet engineering clubs on campus. **CPP Material Advantage** presented the opportunities available for students who pursue materials science and engineering in their academic and professional career. Parents and students asked questions about the college experience and the benefits of coming to this university and joining the right clubs.



CPP Annual Club Fair

Every year, CPP hosts a club fair to let students know what club opportunities are available for them for the year. **CPP Material Advantage** took this chance to let students know what our club does as well as to meet potential members who are interested in pursuing materials science and engineering. To show how fun science can be, we demonstrated how to make ice cream by freezing milk and sugar using salt and ice. Through this, we showed how our club intends to make the year fun as well as educational for our members.



CPP MA advertising started with a hand-painted but soon adapted to more modern ways to attract attention



Prospective MA members enjoying a cold serving of homemade ice cream on a hot summer day.

Engineering Scholars Day

Prospective CPP engineering students were invited to the Engineering Scholars Day to learn more about the university's engineering department and the limitless opportunities it offers to their students. **CPP Material Advantage** shared the opportunities awaiting for them in materials science and engineering, and the board members shared their personal experiences with attending the school and provided tips on how to survive the transition from high school to college.



MA board members interacting with high students and giving them an insight on the college experience. As the students are prospective engineering students, we took the time to describe the department and the clubs under it.



While **CPP Material Advantage** focuses on professional experience and skill building activities, several more casual and social events were subsequently planned throughout the year to create a welcoming club and community on campus. We have hosted 3 social activities, ranging from boba fundraising, festival celebration and integrative talk—social activities.

Cha for Tea Fundraising Social

The Cal Poly Pomona chapter of **MA and NACE** jointly hosted fundraising event encouraging members to get together and chat at Cha for Tea.



Thanksgiving Social (11/20/2018)

Members made a gift (top right) for a leaving staff member and discussed upcoming events. Thankful message was written on the handmade crafts.



Opportunities for Steel Social (04/25/2019)

An event sponsored by AIST to help spread information on upcoming opportunities related to the steel industry. In this event, we introduced to them the scholarship and resume review opportunities at AIST. Board members also assisted members with internship and scholarship applications in this event.





Material Advantage at **Cal Poly Pomona** greatest achievement and asset towards improving the club was its organization backbone and structured planning. Care was taken to ensure members were properly equipped with the tools to carryout their designated duties. Board members maintain a steady communication by meeting weekly to discuss event logistic, club finance, progress and planning associated with MA events. In this year, we have hosted 40 executive meetings. We would also meet with our advisor monthly where he would provide guidance on organization techniques, fund management, and important opportunities for the chapter.

Description of Duties

President

It's the presidents job to ensure the chapter continuously works toward a common goal. They spearhead organization and decision making.

Duties include but are not limited to

1. Being a primary point of contact with the advisor, professional societies and potential speakers
2. Creating a detailed plan for the school year
3. Delegating tasks to individual members
4. Leading chapter meetings and board meetings
5. Handling chapter paperwork
6. Handling all logistics and final decision making

Vice President

The Vice President provide assistance in areas where the president's skill sets may not cover. As such, many of their duties are similar but spit between the two.

Duties include but are not limited to

1. Assisting with meetings, paperwork and logistics when the president is unable or absent
2. Overseeing the end of the year report and other special applications.
3. Managing outreach activities
4. Organize the election progress for the next year's board members

Treasurer

The Treasurer manages all budget related forms and documentation.

Duties include but are not limited to

1. Presenting a budget report of board meetings
2. Writing a budget for the following year
3. Reimbursing members through student government

Outreach Chair

The outreach chair focuses on networking for the chapter at professional events.

Duties include but are not limited to

1. Attending professional society meetings and , maintaining a list of potential speakers and contacts
2. Networking at all professional events

Secretary

The secretary oversees communication of organization.

Duties include but are not limited to

1. Creating newsletters and invitations
2. Writing meeting notes during board meetings
3. Managing the chapter website

E-Council Representative

The E-council representative serves as the primary contact for student government E-council and assist with advertising events and social media.

Duties include but are not limited to

1. Creating flyers and Instagram post for chapter events
2. Attending E-council meetings



Website Management (www.cppma.org)



Established this year, the **Material Advantage** website serves as a platform where everything that can be known about the club can be found. The club's mission and board members are listed to promote transparency and accessibility to all our members. Our philosophy of continuous student engagement is made even more possible with this website.

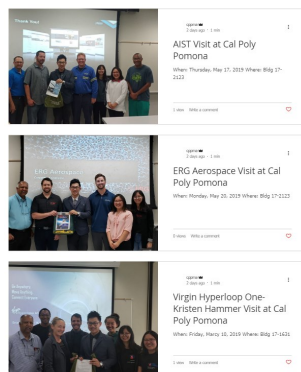
Website features include:

- About page that includes a list of this year's board members and contact information
- Forms for potential members and collaborators
- Archive of past events with a photo gallery of board members, attendees, and guests
- Contact page where anyone can leave a message with the promise of a speedy reply

The goal for this website is to increase visibility and promote student engagement to create active member participation.



Website: cppma.org



Social Media Management

Establishing a social media presence allowed us to connect with a broad range of students. In addition to sending email updates, we used Instagram to share announcements, upcoming events, and updates to keep our members on the loop.

We also dedicated a lot of time in designing and creating eye-catching and easily accessible flyers to advertise our events. We also collaborate with the university's Office of Undergraduate Research program to help us advertise our activities. This method of advertising had allowed us to have a combined total of 500 students for all our events.



Instagram: [@cpp_ma](https://www.instagram.com/cpp_ma)

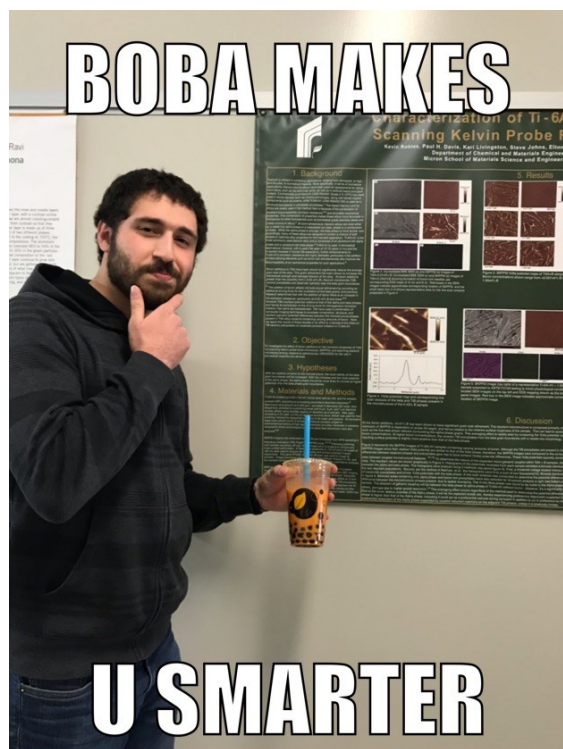




In this academic year, the **Material Advantage – Cal Poly Pomona chapter** collaborated with the **NACE Cal Poly Pomona section** to develop two fundraising events for both clubs. Both clubs have worked together collaboratively and successfully hosted two fundraising events. The first event is the **Cha for Tea Boba Fundraising** mentioned in the previous section. The second event is **selling a custom design shirt**. Both clubs jointly designed a shirt with the message of “Material Innovation Against Corrosion” as a slogan for this year. The shirt was sold for \$25 dollars with an investment of \$10 dollars per shirt. The CPP MA chapter successfully fundraised a total amount of 400 dollars in both events.

The success of our fundraising is still preliminary. The chapter has also encountered many difficulties during fundraising. This process involves many advertising efforts and communication between a local company, e.g. drink store, shirt printing firm, board members, the advisor, and the student community. It is certainly of our inspiration to develop more and entertaining activities, such as bowling, for fundraising. Pictures associate with each event are attached”

Cha for Tea Fundraising Social



CHA FOR TEA FUNDRAISER
 3560 W Temple Ave. Ste A&B
 Pomona, 91768 (909)598-8499

Organization Name:
Material Advantage

Date:
Friday, February 22, 2019

Time:
12:00 PM - 4:00PM **CASH ONLY**

\$1.00 will be donated with every LARGE size drink and \$0.50 will be donated for every small size drink. Not valid with other promotions. **CASH ONLY**

Club Shirt Sale





Statement of Success and Future Excellence

The preceding report reflects on the success and dedication of the **Material Advantage Cal Poly Pomona** Chapter. Prior to the 2018-2019 school year, any inquiry to a student about the chapter was answered only with a blank stares. Now, after professional talks, social activities, and community outreach the chapter proudly stands as one of the largest rising clubs within the engineering department. However, this year goal was precise; to create a strong foundation for the future of the chapter. With the chapter once again supporting the campus community, it can now focus expanding for the future as a stable, ongoing resource for Material Science.

The goal for the 2019-2020 is to establish **Material Advantage** as a key central hub connecting all engineering departments. Material science is a diverse field encompassing many professional. There is no reason should not hold the same representation. Thus the future board has 3 essential directives: Maintaining the same standards set by the 2018-2019 year, increasing student diversity and participation, and boosting sustainability and stability for future boards.

While the year has come to a close, **Material Advantage** continues to support students in their pursuit for material science. Professional talks and outreach events were scheduled even after finals, and the Chapter has helped fund 14 students attend the MS&T conference. Additionally, two members will be attending the **Material Advantage** Leadership workshop to better understand how to benefit the chapter. Previous contacts with I-poly, ASM, AIST and all other non-speaker events will be maintain throughout following year to maintain the standard of excellence our current member base expects from the chapter

The board will increase member size and diversity by creating more avenues for varying skillsets. Currently, the board plans to participate in the TMS bladesmitting competition over the following 2 years. This particular can be an important draw for mechanical engineers. Resources will focus on first achieving this, then later other competitions and events will be explored for future implementation if permitted. Connections will also be made during meeting with other clubs on campus such as Hyperloop, Aiche, and Engineering without Borders to establish **MA** as a central hub for engineering extracurriculars across multiple departments.

Finally, **MA** at **Cal Poly Pomona** will **continue prepare for future success**. An intern program will be established to allow dedicated students to collaborate with the Chapter board. This will also ensure the next generation of board members is strong and well equipped with the skills needed to be successful in the coming years. Logistics will build from previous experience allowing for a more consistant schedule for 2019-2020. More social events and company tours will be established to create a stronger, more interconnected community increasing member retention. And of course, **MA** will focus heavily industry talks and information to usher interested student into the field of Material Sciences

The field of Material Science is massive. As door for prospective leaders in the industry, **Cal Poly Pomona Material Advantage** Chapter goals need to be equally as a strong if it hope to fully represent the opportunities the industry holds. Through the same dedication displayed in 2018-2019, the 2019-2020 board will rise up to the challenge of becoming the central club for multi discipline engineering at **Cal Poly Pomona**.

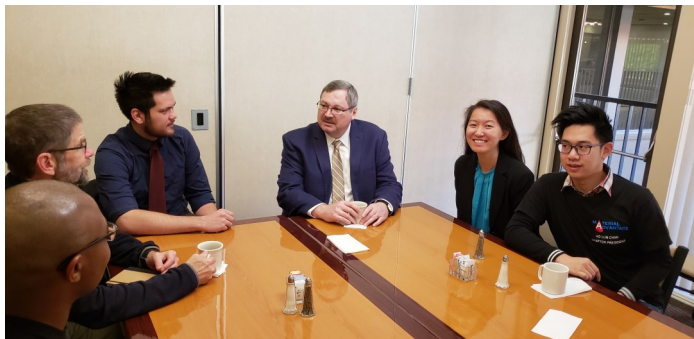
Conclusion

The **Material Advantage Cal Poly Pomona** Chapter in has seen great success in the 2018-2019 school year. Through five professional talks and three social events, the chapters student member base grew to 130% winning us the Most Students Recruited from ASM International Award, and diversified by including freshman to masters student across 9 different majors. The increased member base was coupled with 4 career development events, in particular the Undergraduate Research Grant Competition (SharkTank) supported by the Los Angeles chapter of ASM International. Finally, Material Science was advocated to K-12 students, Cal Poly Pomona students and even congress members through 3 different outreach events. At the beginning of the Year, Material Advantage was hardly known to anyone. Now, with increased popularity and with much of groundwork for success laid down, MA at Cal Poly Pomona will continues to develop and equip students to excel in the field of materials science and engineering. For the year 2019—2020, we are continuing the success by (1) assisting undergraduate and graduate students to attend and present their research work at MS&T 2019, TMS 2020, and AISTech conferences, (2) participating in the materials bowl and bladesmithing competition, (3) increase our presence and develop a stronger partnership with local industry and K-12 outreach events, and (4) scheduling tours to local companies and laboratories.



Acknowledgement

The **Material Advantage Cal Poly Pomona** Chapter would like to sincerely thank their club advisor Dr. Vilupanur Ravi for his generous guidance, support, and mentorship. The board and general student members would also love to acknowledge the staffs and volunteers at all professional societies (ASM, AIST, TMS, ACerS) in providing opportunities and resources to help us learn, grow and be more prepared for our career. Finally, we would also like to acknowledge professional societies in the local area of Los Angeles, including the ASM Los Angeles chapter and AIST Southern California chapter, the Cal Poly Pomona Office of Undergraduate Research, and the Associated Students Incorporation at Cal Poly Pomona for their support and assistance.



Email: cppmaterialadvantage@gmail.com & **Website:** www.cppma.org