

Material Advantage

Student Chapter of Excellence Application
UIUC Chapter 2010-2011



2010-2011 Material Advantage Executive Board

Bottom Row (From Left): Siburu Kuruvilla, Biomaterials Representative; Nick Kubiak, Vice Chair; Sarah Treece, Chair; Scott Navel, Treasurer; Arielle Gross, Engineering Council Representative/Awards Chair

Top Row (From Left): Matt Dejarld, Electronic Materials Representative; Ben Eftink, Metals Representative; Colin Stewart, Secretary/Service Chair; John Tara, Social Chair; Jacob Gruber, Ceramics Representative; Ryan Trumbo, Polymers Representative

1. Chapter Summary

Material Advantage is a professional materials society for students in Materials Science and Engineering (MatSE). It serves as an "umbrella" organization and grants undergraduates membership in TMS, ASM, AIST, and ACerS. The University of Illinois Chapter is a student organization for undergraduates in Materials Science & Engineering at the University of Illinois in Urbana-Champaign. Our goal is to keep the student body informed as to the opportunities available within Materials Science and to serve as a liaison between the students and faculty of the Materials Science and Engineering Department of the University. Material Advantage plans both social and professional events and serves as a resource for MatSE students. We also attend local and national events for outreach and group development opportunities.

2. Programming

The UIUC chapter of Material Advantage put together a great assortment of activities meant to accompany the social and service events created and executed by the chapter. Additionally, the executive board of MA coordinated extensively with our counterparts in the UIUC chapter of Keramos in order to establish a balanced slate of activities for the year as well as to define the proper niche for each organization. Over the course of the year, Material Advantage molded into the liaison to the materials science and engineering department as well as the hub for outreach in the community as well as on campus while Keramos provided students with career development opportunities and alumni relations. This cooperation provided an excellent array of programming for the members of each organization.

Independently, Material Advantage provided a great deal of programming. These events included an undergraduate advising night, creation of two events for Engineers Week, facilitation of the materials science portion of the University of Illinois Engineering Open House, a student speaking competition, and semester course feedback sessions.

Our undergraduate advising night took place on Thursday, October 28th, 2010. This evening event was placed strategically a few weeks before the beginning of registration for the spring semester and was targeted at freshman and sophomore students unsure about their course trajectories, goals, and interests. The UIUC chapter of MA had representatives from each of the five available concentrations of study present to give advice. Each representative created a flyer dictating the necessary courses for each area of study as well as companies and research areas available to students who choose that particular path. In addition to the representatives and the remainder of the MA executive board, four faculty members including the assistant academic advisor for the department attended. The Professors were able to provide additional viewpoints and guidance to the attending students.

In order to get involved with the entirety of the College of Engineering, MA participated in the annual Engineers Week celebration. These events took place the week



of February 20th and were geared toward increasing camaraderie among engineering students and retaining underclassmen. MA entered two teams into competition and hosted two competitive events. These events were a food relay and root beer pong.

The food relay was particularly successful and attracted over 125 participants. This was a light hearted event involving an M&M toss, smartie race, cream pies, and fruit roll ups. The heart of this and the other events, however, was to strengthen relationships among the students. In this regard, we were undoubtedly successful.



Another critical piece of programming orchestrated by MA was the materials science portion of the Engineering Open House (EOH). Every year, the University of Illinois hosts EOH and it consistently attracts more than 20,000 visitors to campus. Each department is run autonomously and administered by the engineering council. MA handles the arrangements for the materials science department. As will be discussed later in the service section, each concentration representative created and displayed an interactive exhibit. However, MA was responsible for the execution of the entirety of the materials science portion of EOH. The Vice Chair of our chapter also serves as the Director of EOH. He provided training, fundraising, and logistical support to all of the more than 20 materials science exhibitors. Additionally, he designed the t-shirts and decorations for the occasion. Finally, he directed and edited a Back to the Future themed materials movie for display in the main exhibit hall.



In addition to events confined to the local campus, MA also hosted an undergraduate student speaking contest to decide who would participate in the national competition at MS&T 2010 in Houston, TX. We had three students present their research for our panel of judges including our faculty advisor and a materials science graduate student. The winner, Siby Kuruvilla, put on a great showing at MS&T. While he did not place in the speaking competition, he did win the undergraduate poster contest for his accompanying poster.



Finally, our chapter hosted end of semester course feedback sessions. These provided an excellent avenue for students to voice their opinions on their various classes as well as for us to interface directly with faculty on various developments and changes in the undergraduate curriculum. During the last general meeting of each semester, we spent a large portion of the meeting discussing the course content, professors, teaching assistants, textbooks, and overall quality of each course. The responses were then aggregated into a briefing. A group of students representing the majority of the courses discussed then met with the department head, academic advisor, and several other faculty members regarding the course feedback. This is undoubtedly an invaluable tool for continuous improvement of the undergraduate curriculum.

3. Career Development

The University of Illinois provides a wide array of career fairs, guidance, and assistance. Over the course of the year, Material Advantage strove to fill programming

useful to materials science students. These events included our previously mentioned undergraduate advising night in addition to announcements of job opportunities and scholarships at each general meeting. All of the officers (the majority of whom are upperclassmen) were also always on hand to offer guidance.

The UIUC chapter of Material Advantage also had a presence at many of the major conferences during the 2010-2011 academic year. We had 5 students in attendance at MS&T 2010, one student in attendance at the 2011 TMS Annual Meeting and AISTech 2011, and two students attended SETCVD 2011.



At MS&T 2010, MA members attended leadership workshops, speaking competitions, poster competitions, career workshops, and a large number of networking events. These events allowed for a great deal of collaboration and insight into best chapter practices and allowed us to create a great deal of contacts. These contacts in addition to newly honed networking and career development skills allowed us to be more effective leaders at our local chapter.

Science-Engineering-Technology Congressional Visits Day (SETCVD) provided another outlet for networking, development, and community growth. The Chair and Vice-Chair of the chapter traveled to



Washington D.C. to speak with the offices of four U.S. Congressmen. The goal was to speak



with Representatives, Senators, and staff members to advocate for the continued support of scientific research. The event provided the opportunity to make a difference in Washington as well as the added benefit of networking with students from other universities and professionals from the area.

4. Service

The service committee of the UIUC chapter of Material Advantage was undoubtedly a shining star of our organization this year. We had previously not implemented a dedicated committee for these activities. The Service Chair created and thoroughly utilized a service



committee during this academic year. This subset of our organization met weekly and was able to accomplish a great deal of activities in a relatively short period of time. These events included Destination Technology, MatSE Mobile, booths at various campus events, MatSE Radio, Engineering Open House (EOH) exhibits, and Relay for Life.



Destination Technology was a three part event new to the organization this academic year. It is a program that provides interactive science activities to roughly 70 female and minority children in Peoria, IL.

The theme for this year's program was materials science, so MA provided the bulk of the program. The first two programs took place on Saturday mornings in November at Von

Steuben Middle School. The lesson of the first program was "What is engineering vs. what is science? What is MatSE?" The demonstrations included at the event were a composites challenge (plaster and various construction materials utilized to create the strongest structure), polymer slime



(homemade silly putty), and gumdrop crystal structure models. The lesson of the second program was a recap from the previous session and a reiteration of concepts. Demonstrations included Ferro-fluids, non-Newtonian fluids (cornstarch and water), a structural materials demonstration, "people particles," and a challenge demanding students construct towers from newspapers. The final Destination Technology event took place in



March where MA provided guides for more than 70 students and teachers at the Engineering Open House (EOH). (As described in the "Programming" section, EOH is a massive science fair spanning all engineering

disciplines at Illinois. It regularly attracts more than 20,000 visitors to campus.) Students were able to tour exhibits from all departments, see a massive concrete crushing demonstration, and finish the evening with a pizza party.

In addition to the above program, the service committee also organized outreach trips to both Champaign and Chicago area schools. Students contacted math and science teachers at the schools and arranged for class time to demonstrate materials science principles. These demonstrations included those used for Destination Technology in addition to Jolly Rancher fiber optics and food coloring diffusion. The MatSE Mobile



demonstrations were also used at campus events where MA participated in Illinites (Friday night events at the Illini Union held for the general student body) and the Mom's Weekend celebration. These booths provided mini demonstrations of shape memory alloys, hydrophobic sand, non-Newtonian fluids, Ferro-fluids, and hydrogels to a nonscientific audience. This served to raise awareness of the field of materials science among college students and parents.

In addition to live demonstrations, the service committee also participated in the ASM Materials Radio Podcast Competition. They created a podcast detailing the workings and benefits of superconductors along with a visual demonstration conducted in a lab on campus.

Finally, in addition to providing logistical support to materials science exhibitors at the Engineering Open House, MA also created five exhibits representing each of the available concentrations. These included interactive exhibits





demonstrating 3-D printing, electronic materials, metal coatings, biomaterials, and ceramics (including exploding Prince Rupert's drops.) Also at EOH, MA ran a cotton candy booth to raise money for Relay for Life. We were able to raise more than \$700 for the cause.

5. Social Activities

The UIUC chapter of Material Advantage hosts a wide variety of social events for members designed to boost attendance at all MA events as well as to develop relationships among members. These events include our weekly Friday social, football viewing parties, paintball, and bowling.

Our Friday social is certainly our most regular event. Every Friday at 4 pm, we gather at a local restaurant for half priced appetizers and good conversation. The event usually attracted roughly a dozen people and offered a great way for members to unwind after a long week of classes and studying. It's also a great way to plan out the weekend. In the fall, we met as a group to watch sports as the Fighting Illini football team travelled. This offered yet another way to reinforce the friendships in the group.

Two of our special events included paintball and bowling. Each event attracted roughly 20 attendees. The paintballing event took place at a local range and was a joint effort with the UIUC chapter of the American Society of



Civil Engineers. The event turned out to be a great way to network with students in another discipline. The bowling social, on the other hand, took place on campus. A large number of underclassmen participated so the social was incredibly worthwhile in that it assisted our chapter in recruiting younger members.

The combination of events held by Material Advantage has undoubtedly contributed to the strong relationships developed among the students of the materials science and engineering department. The department is small and because of the efforts of the students, also close-knit

6. Chapter Management

While an undergraduate materials society has been in place at the University of Illinois for several decades, the chapter has only been chartered as a Material Advantage for three years. As a young society, we felt it important to establish and continuously improve a different set of management practices than those implemented previously. This included the establishment of a chapter website, biweekly officer meetings, and the creation of three committees to expand the fundraising, service, and Engineering Open House (EOH) capabilities of our chapter.

In the summer of 2010, the newly elected executive board collaborated to create the chapter website. The primary designer and editor of the site was our Vice Chair, Nick Kubiak. The site can be found at <http://ma.matse.illinois.edu>. Some of the functionality is still a work in progress, but it has proved an invaluable tool for communicating the chapter calendar, displaying resources, and allowing a centralized location for event sign-ups. The newly elected ceramics representative volunteered for webmaster duties upon the

graduation of the site creator. However, we are considering adding a webmaster officer position to our board after the 2011-2012 academic year.

An additional change to the structure of the leadership was the establishment of committees and biweekly meetings. Previously, the executive board met only twice per semester with individualized communications thereafter. The increased meetings resulted in a greater exchange of information resulting in fewer miscommunications as well as the institution of several events such as a three-part service event (Destination Technology), our bowling social, and many others. Also, the creation of committees resulted in a variety of benefits. Each committee consisted of 5-12 dedicated students. The fundraising committee put on an auction to fundraise for the chapter as well as a sale that raised more than \$700 for Relay for Life. The EOH committee ensured that the materials science portion of EOH went off without a hitch and the annual materials show was created in time for the event. Finally, the service committee, which met every week throughout the semester, was able to establish a written repertoire of materials demonstrations. This became useful as service events became more and more frequent. The service chair, Colin Stewart, was able to set-up a three part service event for minority students, multiple MatSE Mobile appearances (involving demonstrations at area and suburban high schools,) several on-campus fair, and many more activities more clearly outlined in the service section.

In order to ensure best practices are retained from year to year, we created a MA Google account with a folder for each officer. Summaries of the year's events along with suggestions for the future are saved in each officer's folder and then passed down to the

next executive board. In addition to this, following each election, a lengthy pass down dinner is held to ensure future officers are up to date on their duties and responsibilities.

Elections themselves are held every April during our general meeting. Applicants are required to submit a list of their experiences as well as any facts they want to share about themselves for dispersal and also must give a 2-3 minute speech in front of the general body. Material Advantage members are then allowed to vote for the most qualified candidate. Over the course of the year, general body meetings attracted an average of 50 members with activities attracting a strong subset of this group. Because of increased efforts to recruit underclassmen through activities in the 100 level MSE courses and various social activities, we had an increased turnout of younger members apply for positions. This is essential for smooth turnover of officers year to year. Additional recruiting was done at organization fairs such as Engineer's Night as well as positive word of mouth.

Finally, every effort is made to recognize the achievements of individual members. During the course of the year, Colin Stewart was named Society Member of the Month out of more than 50 engineering societies.

7. Timeline of Events

- General / Monthly Meetings
 - 2 September 2010
 - 7 October 2010
 - 4 November 2010
 - 2 December 2010 (Course Feedback)
 - 3 February 2011
 - 3 March 2011
 - 13 April 2011
 - 2 May 2011 (Course Feedback)
- Career / Professional Development
 - Dow Corning Info Session: 9 September 2010
 - Career Info Night: 16 September 2010
 - Materials Science and Technology Conference (MS&T): 16-20 October 2010
 - Science, Engrg, and Tech Congressional Visit Days (SETCVD): 5-7 April 2011
 - ASM Chapter Dinner: 11 April 2011
 - AISTech Conference: 2-5 May 2011
- Academic Development / Outreach / Fundraising
 - Executive Board Meetings: Every other Monday
 - Service Committee Meetings: Every Wednesday
 - MatSE Auction: 26 October 2010
 - Undergraduate Advising Night: 28 October 2010
 - Destination Technology: 13, 20 November 2010 and 12 March 2011
 - Engineering Week Activity Host: 20-26 February 2011
 - Student Introduction to Engineering (SITE): 25 February 2011
 - Engineering Open House: 11-12 March 2011
 - Relay for Life: 16 April 2011
- Social Events and Development
 - Friday Socials: Every Friday at Legends Restaurant
 - Fall MatSE Department Picnic: 21 September 2011
 - MatSE Department Holiday Party: 8 December 2010
 - Bowling at the Union: 12 February 2011
 - Paintball with American Society for Civil Engineers (ASCE): 9 April 2011
 - Science night with Society for Women Engineers (SWE): 21 April 2011