

2012-13 Samuel Glasstone Award Application



Massachusetts Institute of Technology ANS Student Section





Table of Contents

The MIT-ANS Student Section	3
<i>Officers</i>	
Hosting the 2013 ANS Student Conference	3
<i>Attendance</i>	
<i>Theme: "Public Image of the Nuclear Engineer"</i>	
<i>Venue</i>	
<i>Technical Program</i>	
<i>Website</i>	
<i>Fundraising</i>	
<i>International Participation</i>	
<i>Nuclear Energy Innovation Summit</i>	
<i>Volunteering</i>	
<i>Career Fair</i>	
<i>Keynote Speakers</i>	
Public Outreach	6
<i>Email Inquiries</i>	
<i>K-12 Outreach Events</i>	
<i>Slide Repository</i>	
Community and Public Service	7
<i>CASPAR</i>	
University Service	8
<i>Seminar Series</i>	
<i>Cosmetic improvement of office buildings</i>	
<i>Undergraduate Activities</i>	
ANS/Nuclear Industry support	12
<i>ANS Northeastern Section Meeting</i>	
<i>ANS National Meetings</i>	
<i>Leadership</i>	
Social Events	13
<i>Athletics</i>	
<i>Socials</i>	
<i>Coffee Hours</i>	
<i>New TV for ANS Lounge</i>	
Section Management	17
<i>Budgeting</i>	
<i>Communication</i>	
<i>Public Calendar</i>	
<i>Executive Committee and General Body meetings</i>	
<i>Website</i>	
<i>Section Rules Updates</i>	
<i>Officer Elections</i>	
MIT NSE PhD Program Reform	18



The MIT-ANS Student Section

MIT ANS considers all undergraduate and graduate students in Course 22, Nuclear Science and Engineering (NSE), to be active members of the Section. Students from other disciplines may become members by submitting a request to one of the section officers. This definition of membership may cloud the differentiation between ANS activities and department activities. As much as possible, this report includes only initiatives taken on by students on behalf of ANS. MIT ANS seeks to function in a way that will benefit its membership as much as possible with a minimal time commitment to those members. As such, MIT ANS has chosen not to have frequent general body meetings; rather, it has a large end-of-the-year banquet where the majority of formal business is attended to and conducts any other business at seminars.

MIT ANS serves its membership outside of formal general body meetings in several capacities. First, it leads a robust seminar series, striving for an average of one presentation per week throughout the academic year. MIT ANS is charged with welcoming new students in the Fall semester at the department's orientation and in the Spring semester during accepted students' visit weekend. Various social activities are organized for both events. During visit weekend, ANS also matches up incoming students with current student "buddies" and organizes tours of graduate student housing. Of course, social events are also held throughout the year in various formats.

MIT ANS has the great opportunity to influence the direction of the MIT NSE department. The co-presidents are invited to and regularly attend monthly faculty meetings, where they are expected to contribute as the voice of the student body. Also, MIT ANS coordinates a report from the students to the Visiting Committee when it meets to discuss the direction of the department.

Officers

MIT ANS officers for 2012-2013 were elected at the 2012 ANS end of year banquet.

- Co-Presidents: Lindsey Gilman and Giancarlo Lenci
- Public Information Officer: Nathan Gibson
- Treasurer: Rosie Sugrue
- Social Chairs: Sara Ferry and Alex Mieloszyk
- Athletics Chair: John Hanson
- Undergraduate Chair: Jake Jurewicz
- Alpha Nu Sigma co-Presidents: Brittany Guyer and Lindsey Gilman
- Professor Benoit Forget serves as the Student Section's Faculty Advisor.

Hosting the 2013 ANS Student Conference

At the closing banquet of the ANS 2012 Student Conference hosted by the University of Nevada, Las Vegas, MIT was selected to host the ANS 2013 Student Conference. This began a year of planning, involving a very large portion of ANS membership, leading to a very successful conference held April 4-6, 2013. This, of course, was the single largest event MIT ANS undertook this year – and likely the largest planning effort in recent MIT ANS history.

Conference efforts were lead by co-chairs Samuel Brinton, Nathan Gibson, and Katia Paramonova. The following is a brief list of highlights from the planning efforts and execution of the event:

Attendance

A total of 637 people registered for the conference, including 536 students and 101 professionals.

Theme: “Public Image of the Nuclear Engineer”

The stated theme of the conference was selected to be “Public Image of the Nuclear Engineer”. This theme was created and developed by Mark Reed. This theme permeated throughout conference, as it was seen in non-technical workshops, keynote speakers’ addresses, and in the media outreach. The highlight of the theme was the filming of videos of the “I’m a Nuke!” campaign. Two videos were shown at the banquets, and a dozen or so more have been created or are in development. The videos can be found at <https://www.youtube.com/user/imanukecampaign>.

Venue

The conference was held at the Renaissance Boston Waterfront Hotel by Marriott in the Seaport District of Boston, MA. This venue is a beautiful hotel, built in the past five years, with an event space exactly the appropriate size. In selecting this venue, a conscious decision to elevate the level of professionalism of the conference was made. By hosting at venue such as this rather than spread out across campus, the conference was made to closely resemble a professional ANS meeting.

Friday night’s dinner was hosted on the Odyssey cruise ship and included a cruise around Boston Harbor. This combined the dinner with a social activity, leading to one of the most unique dance floor environment that has ever been.

Technical Program

The technical program was led by Bryan Herman. Efforts were made to raise the technical level of the conference by requiring extended abstracts for both podium presentations and posters and adding a Best Papers track requiring longer papers. A record number of papers were received, leading to 171 podium presentations and 65 posters being accepted to the conference. A very large portion of the papers were self-selected by the authors to be considered for the Best Papers track, meaning the majority of submitted papers were quite substantial. Tracks were organized to coincide with ANS Professional Divisions.

Four very successful technical workshops were held. The premier workshop was the Nuclear Fuel Management Workshop hosted by Studsvik on their campus in Waltham, MA. Twenty-four students spent the morning at Studsvik learning about commercial in-core fuel management through hands-on tutorials of the XIMAGE code. The other workshops included a Fast Reactors Workshop hosted by Argonne National Laboratory, an Irradiation Testing Workshop hosted by Idaho National Laboratory, and a Monte Carlo Workshop using MIT’s in-house code OpenMC.

Website

The conference website (<http://meetings.ans.org/student2013>) was created and managed by Nick Horelik. The website was hosted on servers maintained by ANS and given a meetings.ans.org URL. With this URL, increased affiliation with the Society was developed, and the conference was likely the first student conference to be listed on the ANS Meeting page. The webpage use the Joomla! open source content management system. Conference registration was managed by ANS, but extra event registrations and paper submissions were handled locally with a robust system built by the webmaster.

Fundraising

Conference finances were managed by treasurer John Hanson, with the majority of income coming from fundraising from corporate sources. The fundraising team of Jacob DeWitte, Will Boyd, and Sam Shaner led an incredibly successful effort to secure enough funds for a successful event. In what is believed to be a record setting fundraising effort in a tough economic environment, a total of approximately \$320,000 was raised.

International Participation

A major focus of the conference planning efforts was in bringing international participants to the conference. Co-chair Katia Paramonova ‘13 led an international committee with six others to encourage international students



and professionals to attend. This proved to be a very successful endeavor. Three plenary speeches were delivered by professors from foreign universities. A total of 88 students held international citizenship, and 36 of those listed addresses outside of the United States.

Nuclear Energy Innovation Summit

The first ever Nuclear Energy Innovation Summit was held at the conference. On Thursday evening, an Idea Storm was held, where students heard motivational speeches regarding entrepreneurship from two invited speakers and subsequently discussed ideas for the future. The categories of the ideas included small modular reactors, “Generation V”, space reactors, and waste management. The Innovation Summit culminated with a Pitch Contest, where student groups pitched business plans to a distinguished panel of judges. This event was a huge success, and is expected to grow next year. MIT plans to hold a second annual Nuclear Energy Innovation Summit next spring, and the 2014 Student Conference has separately listed their stated theme as being related to nuclear innovation.

Volunteering

Volunteer coordinator Nathan Andrews impressively recruited over 50 MIT ANS members to volunteer their time for the execution of the conference. Nearly half of these were not directly involved in prior planning efforts. Many observed that the conference volunteers were available for any concerns, and were well staffed for the entirety of the conference. Volunteers also manned a Google Voice conference hotline, which is an idea that has already been picked up by the 2014 organizers.

Career Fair

Lulu Li and Aditi Verma organized a very successful career fair, featuring 35 booths from corporate sponsors, universities, and ANS.

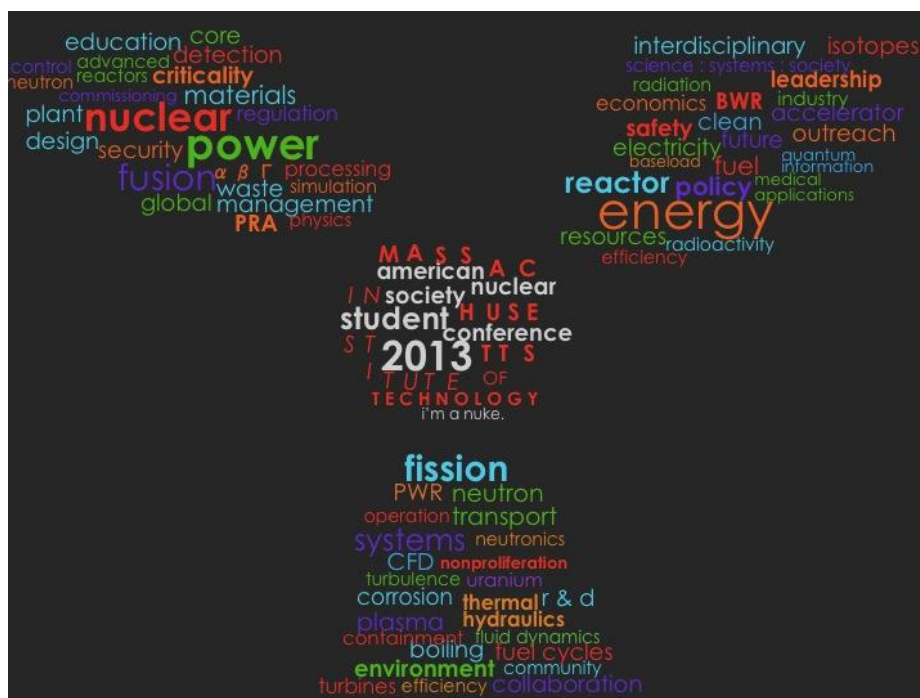
Keynote Speakers

Thursday’s dinner featured speeches from MIT Chancellor Eric Grimson, ANS President Michael Corradini, and NRC Commissioner George Apostolakis.

Friday’s dinner featured Margaret Harding of 4Factor Consulting discussing her role as the face of ANS during the Fukushima nuclear crisis.

Saturday’s dinner featured an incredibly riveting talk from AREVA’s Senior Vice President Andrew Cook.

Several plenary sessions were held during the event as well. One plenary featured a DOE Panel featuring John Kelly (DOE), Hussein Khalil (ANL), and David Petti (INL). PG&E CNO Ed Halpin hosted another such plenary. International speakers included Yukitaka Kato, Soon-Heung Chang, and Chuanxiang Tang. Finally, ANS Divisions provided speakers including Kord Smith, Richard Lanza, Tim Goorley, Jeff King, Glenn Sjoden, and Elaine Hammick.



Public Outreach

Email Inquiries

The MIT NSE department receives many requests for information from students, usually in high school, about the basics of nuclear power. The department asks ANS to respond to these requests, and this year efforts were lead by Nathan Gibson. This year was a bit slower than previous years, but approximately 10 such requests received responses.

K-12 Outreach Events

Several MIT ANS members took part in outreach activities.

Nathan Gibson and Joshua Richard gave a presentation to several classes at the John D. O'Bryant School of Math & Science in Roxbury, MA, on November 29, 2012. This is the third year Nathan and Joshua have given this presentation, and MIT ANS has an even longer history with this school. Their presentation focused on the nuclear fuel cycle.

Geoffrey Gunow gave a presentation to physics students at Revere High School in Revere, MA on October 25, 2012. His presentation discussed nuclear power with a focus on the public's understanding of radiation.

Joe Fricano gave a presentation at Canisius High School in Buffalo, NY, on the Monday after Thanksgiving. His talk focused on nuclear physics, nuclear power, and the myths associated with the technology.

Leslie Dewan gave presentations about nuclear power at three local schools. She ran a school assembly at the Commonwealth School in Boston, MA, on January 10, 2013. She spoke at the Windsor School in Boston, MA, on April 8, 2013. She ran a school assembly at the Roxbury Latin School on April 30, 2013.

Jacob DeWitte spoke to the NAYGN Chapter at CB&I in Canton, MA in February 2013 about nuclear waste and how to produce energy from it. He spoke to an audience of about 40.



Jacob DeWitte organized a tour of the MITR and Alcator C-Mod in October 2012 for middle school students from the Peabody School in Cambridge, MA. The students, their parents, and their teacher learned about radiation, how nuclear reactors work, and what the future of nuclear might look like with grass roots advocacy.

Slide Repository

MIT ANS has long had successful K-12 outreach events, generally organized independently by its members. Very little centralized effort has been placed into this in the past. To encourage this model to continue, a slide repository was started. A request for slides was sent out to MIT ANS, intended to be used for aspiring outreach volunteers. This repository is expected to grow each year, as more people make slides, and also include improvements to existing slides. This will be integrated into the MIT ANS website in the future, allowing the public to access these materials and also to allow other slide repositories (such as those housed at ANS) to be linked to.

Community and Public Service

CASPAR

The students of the American Nuclear Society at the Massachusetts Institute of Technology are committed to improving the community and providing meaningful service and outreach beyond our campus to the residence of the city of Cambridge. Located on Albany Street in the heart of the MIT on-campus graduate housing community, the Cambridge and Summerville Programs for Alcoholism and Drug Rehabilitation (CASPAR) shelter provides lodging and food to community members in need that are looking to begin the CASPAR drug and substance abuse rehabilitation program. Over the course of last year, students from ANS have led a program at the Albany shelter preparing and serving meals on a regular basis.

Over the last year, Caleb Waugh and Alex Mieloszyk have led the program scheduling dates for meals, shopping for food, and leading fundraising efforts. The program has received significant financial support from the MIT ANS chapter, and the faculty of the MIT Department of Nuclear Science and Engineering. For each meal, three to four undergraduate, graduate, and faculty volunteers help in preparing meals. This year's volunteers include Lin-wen Hu, Chris Hu, Jon Hu, Francisco Arias, Valerie Censabella, Becky Asher, Peter Brenton, Jason Hummelt, Katie Biegel, Mark Reed, Arzum Akkas, Nataly Youssef, Jungpyo Lee, Lindsay O'Brian, Roman Ochoukov, Becky Romatoski, and Will Boyd.

Dates of CASPAR events this academic year include:

- May 9th, 2012
- May 23rd, 2012
- June 13th, 2012
- June 21st, 2012
- August 1st, 2012
- September 19th, 2012
- September 27th, 2012
- October 25th, 2012
- November 1st, 2012
- November 15th, 2012
- November 29th, 2012
- December 13th, 2012
- February 21st, 2013
- March 21st, 2013
- April 18th, 2013





University Service

Seminar Series

The ANS Seminar series is one of the most important activities of our student section. The ANS co-presidents, Lindsey Gilman and Giancarlo Lenci, organized the seminar series.

The co-presidents selected and invited a variety of participants in the nuclear field to give hour-long seminars each week to the students, faculty and staff of the NSE department. The seminars, listed below, feature participants from academia, U.S. national laboratories, the Government, and industry.

The purpose of the seminar series is to promote awareness of the work and opportunities that exist in other nuclear science and engineering organizations. The selection of speakers is intentionally broad in order to accommodate the wide variety of interests held by the students in the section.

Each day that a seminar is held, the ANS co-presidents organize a lunch meeting for the seminar speaker and a small group of students. A variety of students are selected to attend these lunches during the course of the year in order to give equal opportunities for students to interact with the speakers in a small-group setting. These lunches commonly provide the impetus for future collaboration amongst students and speakers, as the research topics of students are often discussed during the lunch.

This year we had an intense seminar season consisting of 27 lectures, including 7 international speakers coming from overseas organizations. On 3/11/2013, two years after the recent nuclear events in Japan, we held a special ANS seminar inviting Mr. Kenji Tateiwa to update us with the latest insight on the accident from TEPCO engineers.

List of 2012-2013 ANS seminars:

- 9/17/2012 • Dr. Robert Petroski from TerraPower, seminar on planetary-scale sustainable energy, nuclear energy's role, and TerraPower's technology
- 9/24/2012 • Dr. Jennifer Uhle from the US Nuclear Regulatory Commission, "Fukushima Related Research at the Nuclear Regulatory Commission"
- 10/1/2012 • Prof. Todd Allen from the University of Wisconsin, "Materials Challenges in Nuclear Systems"
- 10/12/2012 • David Christian from Dominion Resources/Dominion Generation, "Questions of the grid, electrical generation and natural gas production facing an energy company leader"
- 10/15/2012 • Prof. Andy Kadak from Exponent, "The Untold Story of Fukushima: The Onagawa Nuclear Plant"
- 10/22/2012 • Prof. Proskuryakov Konstantin Nikolaevich from MPEI, Russia, seminar about Nuclear Engineering research in Moscow
- 11/5/2012 • Dr. Steven Vitale from MIT Lincoln Lab, "Gd₂O₃-Based Solid-State Neutron Detection"
- 11/15/2012 • Mr. Kirk Sorensen from Flibe Energy, "Liquid-Fluoride Thorium Reactors"
- 11/19/2012 • Mr. Neil Wilmschurst from EPRI, "The Impact of R&D on the nuclear industry"
- 11/30/2012 • Dr. Andrew Siegel from ANL, "Exascale computing and its impact on next-generation reactor analysis methods"
- 12/3/2012 • Dr. Frank Garner from TechSource Inc. and Radiation Effects Consulting LCC, "Response of stainless steels to high dose irradiation in various types of nuclear reactors"
- 12/6/2012 • Dr. Julie Bentz from the US National Security Council, seminar about science and technology needed to support our efforts to prevent WMD proliferation and terrorism
- 12/10/2012 • Dr. Barry Ganapol from the University of Arizona, "The Analytical Solution to the 1D Multigroup Diffusion Equation in Heterogeneous Media"
- 2/7/2013 • Prof. Peter Hosemann from University of California Berkeley, "Structural materials in nuclear environments: A challenge and driving force for new techniques and materials concepts"
- 2/25/2013 • Prof. Scott Kemp from Massachusetts Institute of Technology, "Can We Expand Nuclear Power Without Spreading Enrichment?"
- 2/28/2013 • Dr. Iain Macdonald from Nuclear Design Partnership, UK, "The Architect's Role in Nuclear New Build - master planning and design in support of the engineering mission"
- 3/11/2013 • Mr. Jenji Tateiwa from TEPCO, "Fukushima Nuclear Accident: A TEPCO Nuclear Engineer's Perspective"
- 3/15/2013 • Dr. Afaq Shams from NRG, Netherlands, "Numerical simulations of a nuclear pebble bed configuration: a journey from DNS to RANS"
- 3/18/2013 • Dr. Stéphane Zaleski, Université Pierre et Marie Curie, France, "Direct Numerical Simulation of Multiphase Flows with Volume of Fluid Methods »
- 3/19/2013 • Dr. James Conca from RJLee Group, "Geopolitics of Energy: the role of Nuclear"

- 4/10/2013 • Dr. Ken Brooks from Hologic, “Commercial Perspective of Modern Breast Radiotherapy”
- 4/29/2013 • Ms. Tara Neider from AREVA Federal Services, “Responsible Management of Used Fuel and Nuclear Waste”
- 5/1/2013 • Dr. Lance Snead and Dr. Kurt Terrani from the Oak Ridge National Lab, “SiC Composite for LWR Application” (Snead), “Materials Development in Support of Accident Tolerant Fuel Technologies” (Terrani)
- 5/6/2013 • Dr. Roald Wigeland from the Idaho National Lab, “Nuclear Fuel Cycle Evaluation – Informing R&D Decision-Making”

Planned seminars:

- 5/28/2013 • Dr. Yvan Caffari from EDF R&D, France
- 6/19/2013 • Admiral Robert Willard from INPO, former Commander of US Pacific Fleet
- 6/21/2013 • Prof. Akio Yamamoto from Nagoya University, Japan

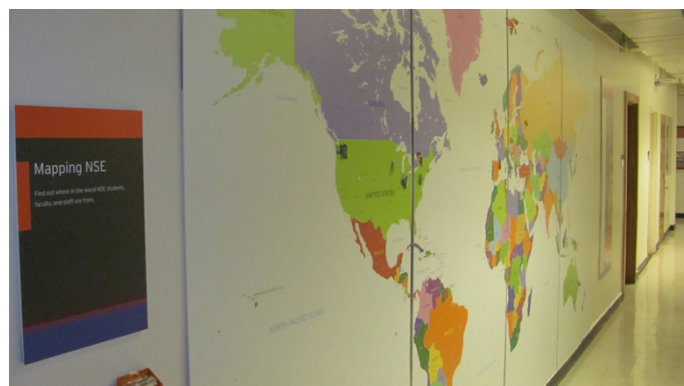
Cosmetic improvement of office buildings

ANS-MIT has promoted several low-cost improvements to some of the areas where graduate student offices are. A budget proposal has been presented to the Department Head in September 2012, which was approved with minor modifications.

As part of our improvement program, a giant world map was printed on a Styrofoam board and displayed on the second floor of building NW12. Students were encouraged to place a small pin on the location where they come from. The wide spread of pins reflects the fact that our Student Section has a strong international representation.

Decorative panels were placed throughout building NW12, and several walls in that building were painted with our unique orange-accent color or with special whiteboard paint.

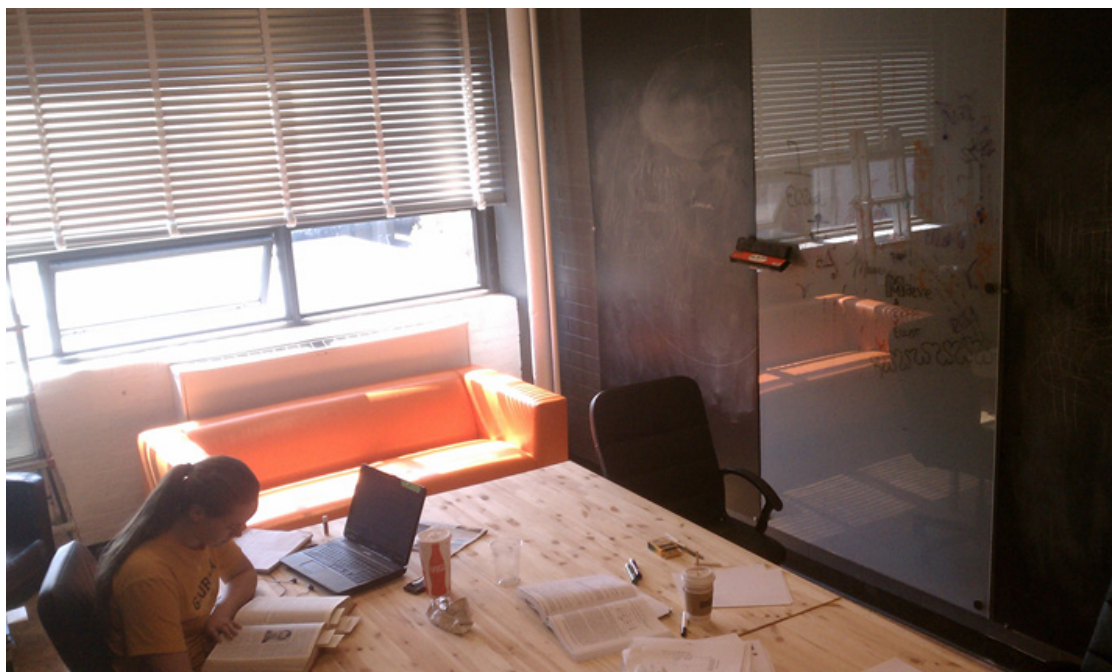
Cork strips were placed in the empty corridors between labs in building NW13 to allow ANS students to display their research posters.





Undergraduate Activities

The undergraduates renovated their lounge on the third floor of building 24 to include more desk space, more chalkboard space, and a more modern design that fits with the rest of the renovations being done to building 24. The proposal, design, and construction were carried out almost entirely by undergrads. In addition to renovating their lounge, the undergraduates also volunteered to help plan and run the ANS Student Conference at MIT this year. The undergrads also continue to help run freshmen recruiting events, particularly the DNSE (Discover Nuclear Science and Engineering) weeklong pre-orientation program for incoming freshmen in August.



ANS/Nuclear Industry support

ANS Northeastern Section Meeting



The MIT Student Section of ANS hosted on campus a monthly meeting of the American Nuclear Society Northeastern Section on April 27, 2013. This was for us a great opportunity to interact with professionals and other experts in the Nuclear field, from the New England area. During the meeting a lecture was held by Prof. George Alverson from Northeastern University, titled “Higgs Boson and Other Recent Advances in Subatomic Particle Research”. The venue was the Pritchett Dining Room in the Walker Memorial of MIT.

On April 30 2013, Graduate Student Aditi Verma received a special invitation to sit at the speaker’s table during another Northeastern Section meeting. The speaker was the US Nuclear Regulatory Commission Commissioner George Apostolakis.

ANS National Meetings



MIT ANS students are typically strongly represented at ANS national meetings. Eleven students attended the 2012 ANS Winter Meeting in San Diego, CA. Several students are planning to attend the 2013 ANS Annual Meeting in Atlanta, GA. A vast majority of our ANS student members attended the 2013 Student Conference, which was hosted by us.

Leadership

Several ANS students cover leadership roles. Among them, Caleb Waugh is the former co-president of the MIT Energy Club and the current president of the MIT Graduate Student Council.

Sam Brinton served as the student director of the International Youth Nuclear Congress 2012. He also served as the co-chair of the 2013 ANS Student Conference, the marketing director of the MIT Energy Club, the president of the MIT Science Policy Initiative. He also is the founder of Stand With Science and MIT Global Zero.

Katia Paramonova and Jake Jurewicz are members of the Gordon Engineering Leadership program. Katia Paramonova was also the co-chair of the 2013 ANS Student Conference and organized a trip to the 2012 AtomExpo in Moscow.

MIT ANS member Mark Reed wrote a speech for ANS President Eric Loewen at the end of his term. The speech was titled “The Science (and Art) of Science Communication for Nuclear Technology: A Matter of Perspective.” It was a speech for “The Science of Science Communication” for the Arthur M. Sackler Colloquia of the National Academy of Sciences in Washington, D.C., in May 2012.



MIT ANS Graduate Students Jacob DeWitte, Josh Richard, Joe Yurko, Will Boyd, Geoff Olynyk, and Caleb Waugh established a Nuclear Community within the MIT Energy Club for the first time in the fall of 2012.

The MIT Energy Club is a student club deeply grounded into MIT's tradition of interdisciplinary work that was founded in 2004 to create an integrated, well-educated MIT energy community across campus through events and initiatives focused on fact-based energy analysis. The Club organizes about 100 events per year, ranging from community mixers to large conferences. The Nuclear Community was proud to host or co-host ten events this year:

Fall Events

- Discussion Series with DOE Assistant Secretary for Nuclear Energy, Dr. Pete Lyons; and Dr. Charles Forsberg, Executive Director of the MIT Nuclear Fuel Cycle Study.
- Seminar: An Introduction to Nuclear Technology
- Nuclear 101: Small Modular Reactors
- Seminar: Introduction to Fusion Energy
- MIT Energy Finance Forum - Financing the Other Side of "The Bridge" Panel
- Spring Events
- Energy Lecture Series: "Nuclear Power: Challenges and Opportunities in the 21st century" by Jacques Besnainou
- MIT Energy Conference - A New Way of Thinking – Innovation in the Nuclear Industry Panel
- Nuclear 101: Producing Energy from Nuclear Waste
- Screening of "Pandora's Promise" about the promise of a prosperous, clean, energy-abundant future powered by nuclear energy.
- Energy Lecture Series: "Two Years after Fukushima - An Update" by Professor Michael Golay

These events drew over 400 people cumulatively, and were a great start to what will become a lasting tradition of outreach and education.

Social Events

Athletics

ANS has continued its long tradition of intramural sport participation this year, with teams in flag football, indoor and outdoor soccer, ice hockey, volleyball and softball. As many as 25% of students in Nuclear Science & Engineering participate in at least one intramural sport, and many are involved in two or three teams over the course of the year. This participation rate is very high relative to other departments at MIT, and intramurals are an important factor in the strong sense of community and camaraderie that NSE students share.

Not only has ANS benefited from the stronger friendships forged on the playing field, but they have done so while consistently fielding some of the most competitive teams at MIT. Under the leadership of Jacob DeWitte and Joe Yurko the flag football team has become a powerhouse over the past five years, including an A-league championship and back-to-back runner-up seasons. In volleyball ANS has consistently fielded one of the strongest teams on campus as well, falling just short of the A-league championship in consecutive years with captain Bryan Herman. The ANS soccer teams, led by Eugeny Sosnovsky and Nathan Andrews, and the ANS softball team led by Joe Yurko have also consistently advanced through the playoffs each year. Most of these teams hold regular practices in addition to their scheduled competitions, taking seriously the opportunity to both compete for their department and build lasting friendships with colleagues.



Socials

Beginning-of-year Barbecue

At the end of August, we emailed all new graduate students to welcome them to the department. Once everyone was back on campus, we hosted a barbecue in another ANS student's backyard for the graduate and undergraduate students. After the barbecue, we went on a Cambridge bar crawl so that the new graduate students could meet everyone else.

Annual ANS Steak Fry

In September, we organized the annual ANS Steak Fry. We ordered 1800 oz of steak from a local meat supplier, in addition to plenty of sausages, hamburgers, and veggie burgers. Trips to Costco and Harpoon (a local brewery were made). The nearby graduate pub, the Thirsty Ear, bartended the event. We held the Steak Fry in the courtyard of one of the graduate dormitories, and it was attended by many people from the department: undergraduates, graduates, administration, faculty, and research staff were all invited. This is one of our favorite ANS traditions at MIT, and it was a great way to bring everyone together and kick off the year.

Interdepartmental Coffee Mixer

In January, we had a breakfast-and-coffee mixer on an early Friday morning with the materials science graduate students and the mechanical engineering graduate students.

Post-Quals Party at the Thirsty Ear

In the beginning of February, we organized the annual post-quals party at the Thirsty Ear. All of the graduate students gather with the faculty for food and drinks, and then the students who took quals leave to find out their results. After, everyone comes back to celebrate the end of quals (and the start of a new semester).



Prospective Graduate Student Bar Crawl

In mid-February, our admitted graduate students were invited to campus for the weekend. The department organized many events to welcome them, and the ANS social chairs organized evening bar outings so that the prospectives could interact with current graduate students on an informal level.

In early April, we had a large mixer for all undergraduate, and graduate students and faculty. We ordered an enormous amount of barbecue food from Redbones, picked up maybe 15 boxes of cannoli from Mike's Pastry in the North End, and got everyone together for dinner.

ANS Student Conference: Social Activities

In mid-April, MIT hosted the ANS student conference! Everyone in ANS came together to help make this event a success for the visiting students. We started a social events twitter feed (@social_nukes) so that students could tweet their locations to us. We'd retweet, and then people could check the twitter feed and be presented with a list of options for meeting up with other conference attendees in Boston at night. This wound up being a great way to organize multiple outings at once with a large number of students. We also organized a large dinner cruise for the Friday night of the conference: the entire conference was invited aboard the Odyssey, where we cruised around Boston harbor, enjoyed dinner and several extravagant chocolate fountains, a presentation from Margaret Harding, live jazz music, and a dance DJ. We were so excited to host other ANS sections here in Boston, and we feel like the conference was a great success.

Chernobyl Diaries Movie Night at the Reactor

In early May, we hosted a movie night in the reactor office building, where our ANS lounge is located. We just got a new flat screen TV, so we decided to break it in with a screening of Chernobyl Diaries and catering from Chipotle. This event brought together ~30 undergraduates and graduates to eat burritos and enjoy a truly bad horror movie with a nuclear theme (which only added to the badness of the movie).

Upcoming: Yellowcake Party

This is an upcoming event to celebrate the beginning of summer. We'll order barbecue and vanilla cake ("yellow cake") and have an outdoor picnic with the undergraduate and graduate students.





Ongoing: Undergraduate Lunches

Our department academic administrator, Heather Barry, organizes regular lunches for undergraduate students. A handful of undergraduate and graduate representatives of ANS attend each lunch in order to get to know the younger students – especially the new freshmen!

Coffee Hours

Our ANS section holds two coffee hour socials each semester in order to encourage interaction between undergraduate and graduate students and faculty members. These coffee hours have been particularly successful in providing an opportunity for students to interact with faculty members beyond their research groups. Because our department is divided into three different broad research areas: Fission, Fusion and Nuclear Security, having these informal gatherings has helped promote awareness, on the part of both students and faculty, of the research and curriculum interests of everyone in attendance.

Approximately 25% of the students and 50% of the faculty typically attend the coffee hours. They are organized by the ANS officers and scheduled during different days of the week each time they are held, in order to avoid repetitive scheduling conflicts. The tradition of this has been well-received by both students and faculty and will certainly be continued in future years.

New TV for ANS Lounge

A large screen was purchased in the ANS lounge for showing viewgraphs during Executive Meetings, for practicing presentations, for other group meetings, and for entertainment, including watching sports. Funding from the TV was raised thanks to the a donation by Prof. Ballinger, and thanks to a contribution from the MIT Graduate Student Council. Becky Romatoski and Mark Reed played a significant role in this.





Section Management

Budgeting

Most of the budget of the MIT Student Section comes from the Nuclear Science and Engineering Department, which is always very supportive of student activities. The co-Presidents and the Treasurer meet in September with the Department Head and present a detailed budget proposal where funding is requested for several activities to be held throughout the year.

Communication

The main mode of communication within our Student Section is mailing lists. Members are divided into two separate mailing lists: one for Graduate Students and the other one for undergraduates. This is made in order to allow for specifically-targeted emails, while most of the emails are sent to both lists.

Public Calendar

This year we held a large number of ANS events. We always had multiple events per week on our agenda, while sometimes we had multiple events per day. A public Google Calendar was used to keep track of all events. Members were able to import it on their own electronic calendar and to always be on top of ANS activities.

Executive Committee and General Body meetings

Executive Committee meetings were planned to happen on a monthly basis, while we had one General Body Meeting per semester, on 10/16/2012 and 3/18/2013. Moreover, we had two Town Hall meetings where all ANS students were invited to specifically discuss the Graduate Curriculum reform, on 11/6/2012 and 4/26/2013.

Website

Our new webpage was improved throughout the year by webmaster Nick Horelik, who also took care of the Student Conference website. It can be found at our new web address: <http://ans.mit.edu>. This website replaces the old HTML-based design, upgrading to a more modern platform. Drupal, an open source content management system was chosen. The main focus of the website is to advertise our graduate seminar series. Also on the main page is a Features section alerting people to important upcoming events that MIT ANS or the MIT NSE department is hosting. The website also features information about the MIT ANS section along with ANS officer information. Finally, a listing of all the events that ANS holds throughout the year is listed under the events page and is linked to the home page. This new design allows the website to be more easily updated and alleviates leadership transition issues.

Section Rules Updates

The MIT ANS section has been in the long process of updating its Rules. Initial changes were made in past years. These changes were approved by the MIT ANS Executive Board and the MIT ANS General Body on October 16, 2012. The changes were sent to the MIT Association of Student Activities and the ANS Bylaws & Rules Committee for review. Both organizations requested additional changes be made. A new draft of the Rules will be voted on for approval at the May 9, 2013, MIT ANS Banquet. The changes to the Rules included modernizing the text, so as to refer to the department by its correct name and to better reflect the current operations of the Section. Past Presidents were added as members of the Executive Committee and a compliance section was added.



Officer Elections

Each May, MIT ANS hosts an end-of-year banquet. Approximately 100 students, faculty, staff, and friends join to celebrate the year's end and honor their contributions. MIT ANS held elections are held during the banquet by secret ballot. During dessert, the MIT ANS Co-Presidents recognize the outstanding contributions from the department staff, faculty, and student body to the department and MIT ANS. MIT ANS also awarded the winners of the fantasy sports competitions.

This year's banquet will be held on Thursday, May 9 in the Mezzanine Lounge of the MIT Stratton Student Center.

MIT NSE PhD Program Reform

In 2010, the MIT Department of Nuclear Science and Engineering faculty formed a new strategic plan for the department, based in part on input from that year's visiting committee and MIT School of Engineering leadership. This strategic plan called for "A general review of the core graduate curriculum and the structure and recommended courses for the doctoral qualifying exam in light of the broadening of the NSE 'commons' and the 'science-systems-society' educational framework."

This goal was carried out by a newly created NSE Curriculum Committee, with members drawn from the NSE faculty and chaired by NSE Department Head Richard Lester, starting in 2011. In October 2012, Professor Lester presented a draft of the new curriculum and program proposed by the committee for NSE PhD students. ANS co-presidents Giancarlo Lenci and Lindsey Gilman engaged with the faculty to create a role by which ANS PhD students could contribute to the completion of this draft program and directly represent ANS students in the process. A thorough polling and feedback effort was conducted in parallel during October and November, led by Giancarlo and Lindsey with results analyzed by Mark Reed.

MIT ANS leaders secured the agreement of the NSE faculty that PhD students should be represented in the process of completing the new curriculum and program and put out a call for representatives in November 2012. ANS leaders and NSE faculty agreed that 4 student constituencies required representation: fission science and engineering students, fusion science and engineering students, nuclear science and technology students, and "pre-qualifier" PhD students. In coordination with the ANS co-presidents, these student constituencies chose their representatives:

- Alexander Mieloszyk, representing fission science and engineering students
- Christian Haakonsen, representing fusion science and engineering students
- Zachary Hartwig, representing nuclear science and technology students
- Daniel Curtis, representing pre-qualifier PhD students

During December 2012 and January 2013, the faculty refined the outlines of proposed "module" half-semester subjects, which were intended to form the broad core curriculum of MIT NSE in the new program. The Curriculum Committee held a series of meetings throughout the Spring 2013 semester to complete the new curriculum and program, which also underwent substantial debate at two monthly faculty meetings and in consultation with the likely instructors of the new module subjects. Student representatives were invited to participate in the discussions in the two faculty meetings in March and April.

The NSE department set several ambitious goals for this curriculum and program reform effort. The core curriculum should integrate and introduce all PhD students to the department's very broad set of research topics, including issues in fission energy, fusion energy, radiation detection, and quantum devices. All of these fields have important scientific, technical, economic, and political components. Additionally, the students in the NSE PhD program come from a wide variety of backgrounds, ranging from political science and public policy, to chemical engineering, to theoretical physics.



Student input produced several substantial changes in the final form of the proposed curriculum and program. Students from all fields of NSE supported keeping the ‘minor’ component of the current program, which enables PhD students to take courses outside their field or research area. This component has allowed past NSE students to pursue interests ranging from advanced scientific computing to music performance. It had been removed from the October draft, but was restored during Spring 2013 updates. Student input also led to significant changes in the topics to be covered by the new core module subjects and helped the committee arrive at a better balance in the core requirements between breadth of topics covered and preparation for specialized research. Students also contributed substantially to many of the finishing details of the new program, providing feedback on potentially unclear “corner cases” in the new PhD qualifying requirements and ways to ensure clear communication of the new requirements to incoming students.

