Samuel Glasstone Report 2016-2017
American Nuclear Society,
University of Wisconsin-Madison

Submitted to the ANS Glasstone Award Committee

May 6, 2017

President	McKinleigh McCabe	
Vice-President	Shaun Aakre	
Treasurer	Alex Swenson	
Public Information	Jake Quincey	
Communications	Robert Haupt	Marissa Brown
Governors	Tim Glennon	Kendall Barrett
	Ken Zander	John Masse
Faculty Advisor	Paul P.H. Wilson	

Contents

1 Introduction

During the 2016-2017 academic year the American Nuclear Society, University of Wisconsin-Madison (ANS-UW) has worked diligently to maintain its track record of planning, organizing, and executing events in areas of service to ANS. These service areas are: public outreach, professional development, and community service. Having been recognized as a very successful student section in many years past, ANS-UW has tried to uphold its image through organization of traditional events as well as undertaking several new projects involving professional development opportunities. Part of this success is due to relationships developed with other organizations such as the American Institute of Aeronautics and Astronautics (AIAA), Material Advantage, Engineering EXPO, as well as strong involvement with the Department of Engineering Physics, the College of Engineering, and the ANS Wisconsin Local Section.

Every year, ANS-UW participates in many community service and public outreach events as a way to give back to the community that fosters the student section. Some of these events include Adopt-A-Highway, the high school essay contest, Youth Workshops, Engineering Expo, and Mickie's Dairy Bar Fund-raiser (during E-week). As always, we had many volunteers for these events, whose energetic presence ensured these were huge successes in the community. Furthermore, our successes in the past led groups we haven't worked with to reach out to us and ask for guest presentations. Such event requests included Siblings Day and Engineering Day.

In addition to community service and public outreach, ANS-UW values professional development opportunities for our students, we were able to organize several visits from professionals to give presentations on nuclear engineering and other related fields. ANS-UW also encourages students to become involved at a national level. We sent students to attend the ANS Winter Meeting in Las Vegas, NV, and a large portion (26 students) or our section attended the Student Conference in Pittsburgh, PA. In addition to these large networking events, members of ANS-UW, as well as other students in the department, attended weekly networking events such as breakfast at Mickie's Dairy Bar on Fridays, and coffee and donuts on Wednesday mornings.

ANS-UW members have even had time to participate in social events, despite spending time in class, research, and public outreach and professional development events. The largest social event was the biannual Pic-Nuke which is a picnic held at the beginning and end of every year for the students and faculty of the entire Department of Engineering Physics. In addition, many other outings such as hockey games, chili cook-offs, and even a corn maze visit allowed students to take a break from their busy schedules and get to know one another.

In summary, ANS-UW has been able to maintain a high level of involvement in the community this past year while being able to expand interest in many other types of activities. Overall, the student members of ANS-UW have been committed and driven in everything they have done this year, This has lead to a very successful 2016-2017 academic year.

2 Section Management

The ANS-UW Student Section uses three separate groups to run our organization: Board of Governors, Volunteer Chairpersons, and Faculty Advsisor. Students are elected from the section to serve on the board on an annual basis; this is the primary body that runs the student section. Students from the section who are particularly interested in helping to make the section successful can volunteer to chair committees and coordinate events. The faculty advisor is a member of the UW Faculty willing to provide senior counsel on decisions for the student section.

2.1 Board of Governors

The ANS-UW section elects seven officers each year to serve on the executive committee. The elected positions include President, Vice-President, Treasurer, Public Outreach, Communications, and two Governors. The communications and two governor officers are re-elected each semester to provide more students with experience on the Board, while the rest of the positions are held yearly.

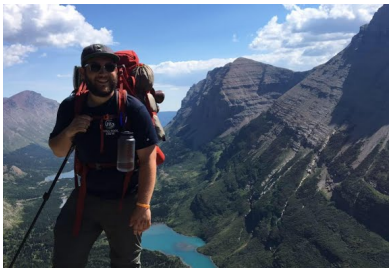
2.1.1 President

The President's main responsibilities include moderating general member and executive committee meetings, scheduling speakers for general meetings, organizing tours and conferences, managing the section's schedule, and acting as the liaison and representative for the section both professionally and within the College of Engineering. The President should also oversee other positions and make sure their duties are being performed. The President for ANS-UW this year was McKinleigh McCabe, who served as the Public Information officer for the previous academic year and had previously served as governor.

2.1.2 Vice President

The Vice-President's responsibilities are organizing the section's social activities, acting as President in the President's absence, and providing emotional support for the President. Some of this year's specific duties included coordinating Pic-Nuke, FISSION, and ordering new t-shirts. This year the Vice-President was Shaun Aakre, who has been actively involved in our student section, winning Captain Neutron last semester and has served on our Engineering Expo committee for two years.

2.1.3 Treasurer



The Treasurer's responsibilities included drafting budgets for the entire year, keeping track of all transactions completed by the organization, writing grant proposals, acting as liaison between ANS-UW and the Engineering Physics Department Administrator, and advising the other executive officers on how best to spend the section's funds. The treasurer this year was Alex Swenson who was involved in repealing the nuclear moratorium in Wisconsin and started a separate student organization with a limited budget.

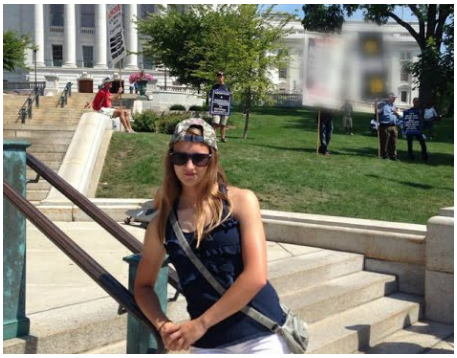
2.1.4 Public Information

The Public Information (PI) Officer must develop, organize, schedule, and execute the section's public outreach efforts as well as oversee the Scholarship Essay Contest. Included in this responsibility was writing and designing presentations to be used at public outreach events, coordinating with teachers and scout leaders to help organize events such as Boy Scouts and the Essay Contest, proper inventorying public outreach supplies, and working earnestly throughout the summer to coordinate Camp Badger (an engineering summer camp for middle school students). The PI for this year was Jake Quincey who served as governor last semester and has been extremely involved in all of our public outreach events. He is also a reactor operator for the University of Wisconsin - Madison Nuclear Reactor (UWNR).

2.1.5 Communications

The Communications Officer's duties are to take minutes at executive committee meetings; send out weekly announcements; advertise for upcoming events usually by flyers, social media, or via email; and to maintain and update the ANS-UW Google Groups mailing list, the ANS-UW website, and the ANS-UW social media accounts on Facebook, and Twitter. The importance of this position is to ensure that the members, students, and community are properly informed about the events going on within ANS-UW. The Communications Officer for the fall semester was Rob Haupt and for the spring semester was Marissa Brown.

(a) Rob Haupt



(b) Marissa Brown

2.1.6 Governor A

Governor A acts as a liaison to the Wisconsin ANS Local Section. Governor A was given this responsibility, which included a monthly conference call with the local section executives which relayed information between both executive boards. Both officers help with other events throughout the semester such as E-Week. The Governor A for the Fall semester was Tim Glennon and for the Spring semester was Kendall Barrett.

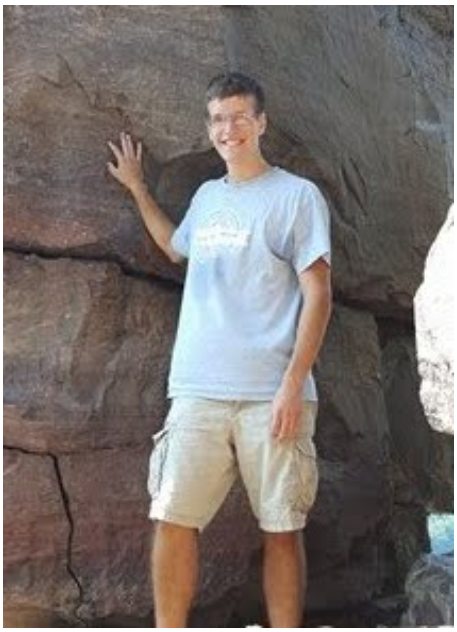
(a) Tim Glennon

(b) Kendall Barrett

2.1.7 Governor B

Governor B is in charge of community service events such as Adopt-A-Highway. The Governor B for the Fall semester was Ken Zander and for the Spring semester was John Masse.

(a) Ken Zander



(b) John Masse

2.2 Non-Elected Positions

2.2.1 Youth Workshop Coordinator

The Youth Workshop Coordinator is main responsibility is facilitating and organizing ANS-UW's Boy Scouts Merit Badger Workshops. This position was formerly our Boy Scout Workshop Chair, but we rebranded workshops and the position to be more inclusive. The workshop still operates to disperse Nuclear Science Merit Badges with the Boy Scouts, but it also is open to girl scouts, and other interested youth groups.The Youth Workshop Coordinator should understand the basic operations

behind Boy Scouts, the Nuclear Science Merit Badge, and the outreach and communication required in order to organize this event. The Youth Workshop Coordinator this year was Jake Quincey.

2.2.2 Advocacy Chair

The Advocacy Chair is the appointed student member head of the newly formed Advocacy Committee. The role of the Advocacy Chair is to act as a liaison between the Board of Governors and the Advocacy Committee and coordinate the work of the advocacy committee. The Advocacy Chair reports directly to Public Information. The Advocacy Committee is responsible for all primary efforts advocating for nuclear energy on a public, university, and political level. The Advocacy Chair for the Spring semester was Louis Chapdelaine.

2.2.3 Peer Mentorship Chair

The Mentorship Chair is a newly reinstated position intended to facilitate guidance for junior students progressing through their degree programs. It is the responsibility of the Mentorship Chair to advocate to young students in the Engineering Physics department to seek assistance in finding information necessary to maximize their college experience (course listings, program handbooks, scholar's programs, research opportunities, etc.). The Mentorship Chair pairs students interested in learning about their opportunities with older students willing to mentor them and establish a rapport. The Mentorship Chair for the Spring semester was AJ Gross.

2.2.4 Diversity Chair

The Diversity Chair is also a relatively young volunteer position in the student section. The Diversity Chair works closely with the Public Information Officer, the Youth Workshop Coordinator, and other Board members to arrange events that promote underrepresented groups in the nuclear industry and STEM fields. The Diversity Chair is responsible assistance and coordination of several events ANS-UW has interest in coordinating.

- Professors in Pink Fundraiser: all proceeds donated to the National Breast Cancer Foundation
- Youth Workshops: works with the Youth Workshop Coordinator to promote diversity in STEM fields education
- Welcome event for South Carolina students: Coordinates welcome activities for a group of students who finish their degree with UW

Rob Haupt was the Diversity Chair this year.

2.2.5 Faculty Advisor

The Faculty Advisor for ANS-UW is there to provide the chapter with advice and act as a liaison between the organization and the department. Often, the Faculty advisor retains his position for many years, so they are able to provide valuable information to the organization, as the Executives and Chairs often are served by people new or just getting involved in ANS-UW. This year, the Faculty Advisory was Paul Wilson, who has served as the faculty advisor for many years and is highly involved with national ANS as well.

3 Operations

In addition to the contributions of the executive committee and its general members, ANS-UW attributes its success to administrative procedures and processes which ensure smooth operation of the section. These processes made it possible for turnover between the previous executive board and this year's executive board to go smoothly. Because of documents, processes, and experience provided to the incoming executive board, future turnovers between executive board members are simplified.

3.1 Office Hours

Traditionally, ANS-UW officers were required to hold office hours at the ANS-UW student organization office in the Engineering Centers Building at UW-Madison. Each of the seven officers were expected to be available for two hours each week to answer questions regarding club activities, t-shirt sales, and any other concerns. ANS members were encouraged to attend office hours if they had any question regarding ANS-UW, and the schedule of office hours was posted on the ANS-UW website and on the door to the student office. Office hours are no longer required for our student section to maintain good standing with the UW student organization coordinators; however, ANS-UW maintains that Board members hold officer hours. This provides an opportunity for the to work on ANS related tasks and, more importantly, ensures an opening for curious students to come and ask questions.

The ANS-UW Office was located in a bay of offices in the Engineering Centers Building on Campus. Throughout the course of the last year that space was renovated and converted to lab/design center space. At the beginning of the 2016-2017 Academic Year, the Engineering Physics Department granted ANS access to an office in the Engineering Research Building.

3.2 Active Membership

Active members are ANS-UW students that have paid dues to the section and achieve three or more active member points per semester. Dues are $10 per semester or $15 for the whole year. Active membership status is required to participate in social events and professional development opportunities.

3.2.1 Active Member Points

Beyond paying dues, active members are expected to participate in varying activities held by ANS-UW. Active members are rewarded for participating at section events and helping with section business. Points can be earned by attending meetings, workshops, outreach events, tours, etc. that ANS-UW hosted or encouraged.

Active membership points come with benefits, such as reduced T-shirt prices or access to special social and professional development events. In the fall members with sufficient active members points were invited to an end of the semester banquet and were eligible to receive funding to attend the ANS Winter Meeting. In the spring sufficiently active members were invited to a spring banquet and had the opportunity to attend the end of the year social with minimal out-of-pocket costs.

These special events serve as an incentive to get ANS-UW members to help with demanding tasks such as hosting youth workshops, volunteering at the student conference, or organizing an Engineering Expo display. With these incentives and the Active Membership Points system, the ANS-UW Board of Governors can more easily delegate work to and organize our members.

3.2.2 Captain Neutron

At general section meetings, ANS-UW likes to recognize one student member who has been particularly active in the period prior to the meeting. The student is honored by being named "Captain Neutron" of the section and maintains this title until another student is picked. Students who receive this award have their picture, often times a humorous picture, posted on the bulletin board outside the departmental office for everyone in the department to see. The student also receives a free ANS-UW

t-shirt. Four Captain Neutrons were named this year, they were: Brandon Little, Kendall Barrett, Pat Crane, and Kalin Kiesling.

3.2.3 End of Semester Banquet

End of semester banquets are held to reward highly active ANS-UW members. Members are enticed by a full potluck spread including appetizers, entrees, and deserts. The Fall banquet featured a Summer in December theme with grilled burgers, brats, and hot dogs; potato salad; spicy rolls: and s'mores bars. The spring banquet featured an extensive fajita bar including chicken, beef, grilled vegetables, salsa, fresh toppings, cookies, and brownies. These banquets are followed by our awards meeting.

Active members who have amassed more than three Active Member Points are invited to a pot-luck banquet and awards ceremony put on by the Board of Governors. Here awards for the member involved in the most ANS-UW activities, most active undergraduate and graduate, and a couple gag awards are presented. Following the award ceremony, we hold our officer elections.

3.3 Financial Planning

The yearly budget is produced by the Treasurer at the beginning of the academic year and presented to the executive board at a meeting where they are ratified. The budget is a mechanism for the board to outline priorities for the upcoming year. Anticipated expenses are detailed as greatly as possible, allowing us to set accurate fundraising and income gaols.

3.3.1 Endowment Fund

In Fall 2016, surplus funds from the 2016 ANS Student Conference were placed in a University-managed endowment fund. The fund will earn steady, yearly interest, and will provide additional support to the chapter for years to come. Spending of the fund is limited to business expenses (travel and official events). The fund is managed by the University and accessed through a Department of Engineering Physics spending account.

3.3.2 Funding

Our income comes from two sources: fundraising and cash income. The treasurer is responsible for handling all these incomes. All of this income is used to support general chapter operations.Cash income comes from numerous sources. Our largest source of income is from Youth Workshops. Our members pay dues for the year or semester, and chapter t-shirts are sold as an additional source of income. Income from member dues was $545, income from Youth Workshops netted over $3000 as of April 23rd, 2017.

3.3.3 Spending

All spending is estimated and approved with the yearly budget. All transactions are monitored and approved by the Treasurer, and are agreed upon at executive board meetings. Spending this year exceeded estimated budget values. Many unforeseen events led to this overspending. Our trip to Save the Nukes, multiple advocacy events, and excessive costs related to travel to the 2017 ANS Student Conference factored into this overspending. However, creative sources of new income were found to offset this spending. We volunteered for Engineering Career Services to receive a $500 donation to our endowment fund, and found an industry sponsor for our Spring Pic-Nuke.

3.4 Communications

Our internal and external communication methods allow us to run a successful student section. All important meetings, procedures, and contacts are archived so future executive board members can

search for them. In addition, we communicate with our members through multiple avenues including: email, our website, social media, etc.

3.4.1 New Website

A new ANS website was launched in March, 2017. This new website was designed using the new Google sites software. The old website contained information that was no longer relevant to the student chapter and was difficult for users to navigate around. The new website has a minimalistic design with a focus on recruiting new members and increasing active member involvement. One of the newly implemented features include a new member form in which new members can fill out their information and be directly added to the email list. Also, information about all upcoming events is located on the home page.

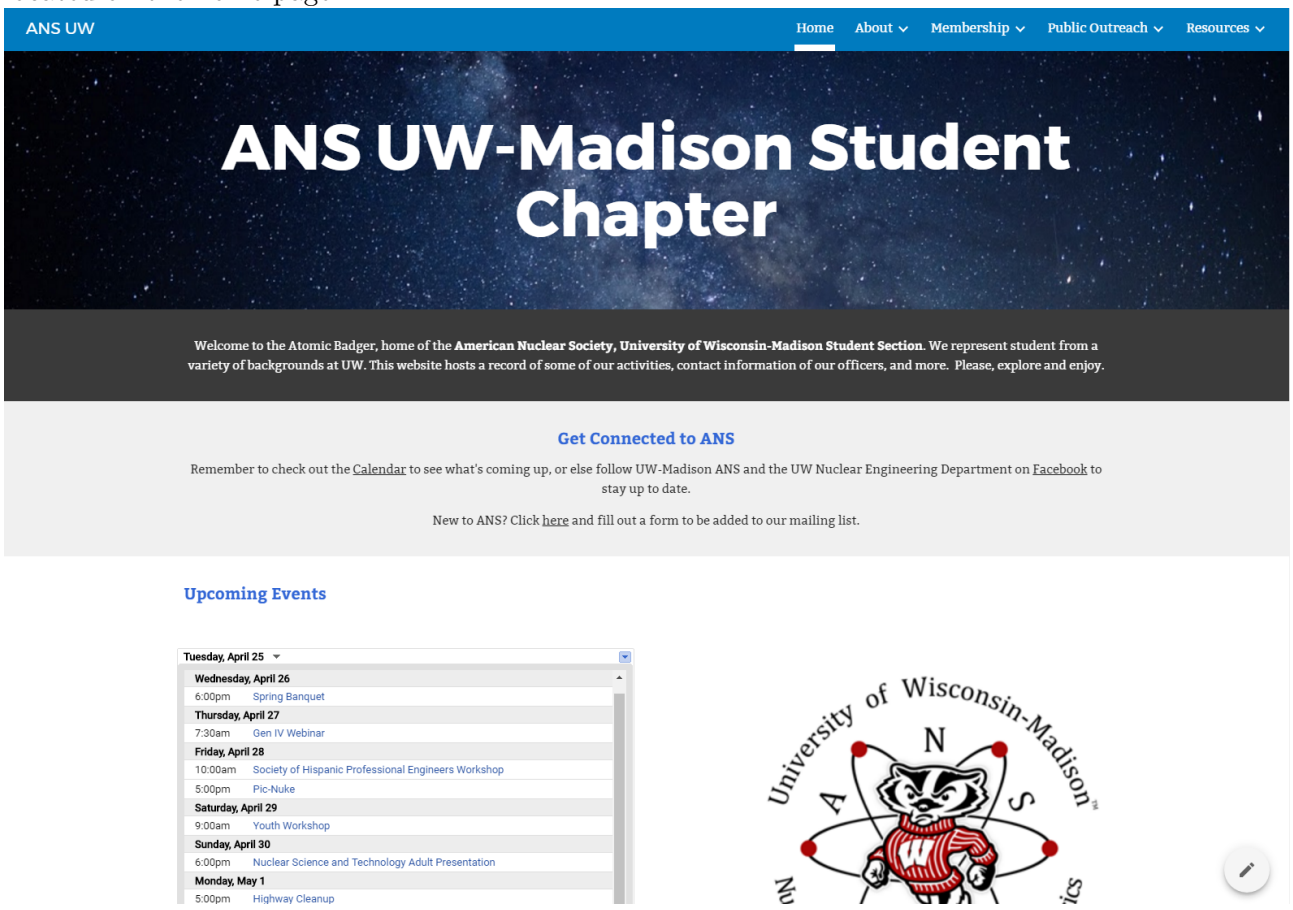


Figure 4: Screenshot of the homepage for the new website

3.4.2 File Storage & Sharing

In order to have all our communications synced and in one place we rely on Google Drive for nearly all internal documentation. Google Drive holds a variety of applications such as word processing, spreadsheet editing, and presentation creation. With Google Drive we are able to share specific files with those in the organization who should have access to them. When multiple people are editing a document changes are updated immediately making real time collaboration possible. Another use of Google Docs is their form submissions which allow members to sign up for events or submit specific information that is needed. Finally, within Google Drive we keep our member email list which allow for email communication within our group.

3.4.3 Slack Channel

Slack was utilized this year to improve both internal and external communications. The ANS Supreme Council slack channel included only members of the executive board. The channel was primarily used to plan meetings, youth workshops, conference travel, and day-to-day communications. A Student Conference slack channel was also created for communication between members that attended the National ANS Student Conference.

3.4.4 Social Media

With the majority of the student body active on social media, it is a great tool for communicating with members. The American Nuclear Society UW Student Section Facebook page is used to post about upcoming events and outreach to the general public. We are also actively post on twitter about social events and nuclear advocacy.

Date	Event	Speaker/ Company
September 21, 2016	Fall Kickoff Meeting	-
October 18, 2016	General Meeting	-
November 21, 2016	General Meeting	Michael Corradini, UW-Madison
December 14, 2016	Fall Banquet	-
January 23, 2017	Spring Kickoff Meeting	-
March 2, 2017	General Meeting	Jack Gadzala, Dominion
April 9, 2017	General Meeting	Andy Klein, ANS National President
April 26, 2017	Spring Banquet	-

Table 1: List of General Meetings

4 General Meetings

4.1 General Meeting Speakers

ANS-UW holds general meetings several times throughout the course of the semester to better disseminate information among the members about upcoming events, opportunities, and meetings. To add an extra facet of interest and professional development to the meetings ANS will frequently invite speakers to present at these meetings.

4.1.1 Michael Corradini

At the University of Wisconsin, we are lucky enough to have offered tenure to some of the world's premier nuclear researchers; Professor Michael Corradini is one such figure. At our section's November meeting Professor Corradini spoke about some of the key similarities and differences of global nuclear incidents. This was accompanied by slideshow of modern images of of the Chernobyl Nuclear Power Plant. One of our members, Rob Haupt, had recently visited the Chernobyl site and was able to share his experience with us.

4.1.2 Jack Gadzala

Jack Gadzala was the guest speaker for our general meeting on March 2, 2017. Mr.Gadzala worked as an engineer for the Kewaunee Nuclear Power Plant for many years, and is now on the decommissioning committee. He spoke on the economics and operation of power plants as well as aspects of decommissioning a nuclear power plant. Kewaunee was owned by Dominion, who decided that the plant was no longer economically feasible. It is currently undergoing a long decommissioning process.

4.1.3 Andy Klein

ANS-UW was lucky enough to have the National president of ANS to come and speak to our chapter. The main topic of his talk was about advanced reactors and the details behind the construction and design of them. He spoke of new scale small reactors spun out of Oregon State University, and how these will prove to be helpful in the future. Professor Klein also spoke about his involvement in ANS, and provided insight to those graduating this year. To conclude his talk, Professor Klein briefly serenaded ANS-UW with his wonderful tenor saxophone playing.

Figure 5: Andy Klein during his post-talk performance

5 Professional Development

5.1 ANS National Student Director Meeting

In the beginning of the academic year, ANS-UW had the pleasure of hearing about the benefits of becoming a member and staying involved in ANS National from Kalin Kiesling, the ANS National Student Director. She talked about the then new ANS Policy Wire, the various benefits one can gain from being involved in the technical divisions, and the ANS National Scholarships.

5.2 Idaho National Laboratory

Dr. Brandon Miller came from Idaho National Laboratory (INL) to discuss opportunities at the Lab. While at UW, he gave a large-group presentation on the mission of INL, the general research interests of the lab, and the facilities the lab has (old, new, and planned). Our section also helped to coordinate a series of small-group discussions; wherein, he explained some of the student and graduate opportunities available to Nuclear Engineers.

5.3 Sandia National Laboratories

Kerry Dunn, a representative from Sandia National Laboratories, and former UW alumnus came to visit UW. While on her visit, she gave a talk to the student section about her time at Wisconsin, her route to Sandia National Lab, and her current work at the lab. She also discussed the culture at Sandia, as well as internship opportunities available to both graduate and undergraduate students.

5.4 Fermilab

Dr. Matthew Quinn came to UW-Madison to discuss the research of Fermilab. He discussed the new projects Fermilab was undertaking to pioneer the frontiers of particle physics, the existing facilities at the disposal of the lab, and the work that had been done to ensure both workers at Fermilab and members of the public were subject to the lowest reasonably achievable radiation levels. Following the presentation, we held a question and answer session to optimize the impact of having Dr. Quinn on site.

5.5 Webinar Series

Our student section participated in the advanced nuclear reactor webinar series developed by the Generation IV International Forum. The webinar series covered a broad range of advanced reactor topics over the course of the academic year: Introduction to Advanced Reactors, Closing the Fuel Cycle, Introduction to Nuclear Reactor Design, Sodium Cooled Fast Reactors, Very High Temperature Reactors, Gas Cooled Fast Reactors, Supercritical Water Reactors, and Fluoride-Cooled High-Temperature Reactors. The breadth of topics presented by experts afforded our section the ability to engage students at a variety of levels in their education.

The primary goal of hosting a group webinar series was to increase student participation in the discussion session that followed the presentations. Furthermore, participating in the webinar provided us with the opportunity to interact with the presenters during the question and answer sessions to cultivate a better understanding of the topics. As an added bonus, by hosting the webinars, students were brought together to discuss the results of the webinar in a collective space.

(a) Students meet to participate in the Introduction to Advanced Reactors Webinar

(b) Students meet to participate in the Very High Temperature Reactor Webinar

Figure 6: Students meet to participate in the Very High Temperature Reactor Webinar

6 Public Information

6.1 Camp Badger

Over the course of the summer, a group of ANS-UW members reached out and participated in a week long, STEM summer camp held by UW-Madison's College of Engineering, Camp Badger. The summer camp is geared at education of middle school students in a variety of STEM fields. ANS-UW gave a presentation for each group of students on the topics of nuclear science and technology, including basic nuclear chemistry, ionizing radiation, radiation safeguards, careers within nuclear science, fission, and fusion. ANS-UW also was able to bring artifacts from the UW Nuclear Reactor and various detectors and counters to share with the students. The workshop managed to reach over 200 students throughout the twelve presentations over the summer. The students also took part in three hands-on demos during the presentation. The demos covered the method of measuring radiation via counting, the fission process, and reactor control via control rods respectively. The students practiced counting alpha, beta, and gamma sources with an ion chamber outputting gross counts over a time period then applied different shields of thin plastic, aluminum, and lead. The fission process was learned about with a balloon demonstration. The students would take a long balloon, representing an Uranium-235 atom, twist it to represent the instability of the Uranium-235 atom, then the balloon would be cut and fly off in to two parts, symbolizing the kinetic energy and fission products from a fission event. For the last demonstration, the students each represented Uranium-235 atoms and organized themselves into tight clusters of "fuel rods". They were each then given three ping-pong balls, symbolizing neutrons, and a few starter ping-pong balls were introduced into the system that started a chain reaction of students throwing their own ping-pong balls and causing other students to "fission". The second part of this demo consisted of the same set-up, but volunteers were put in the middle of the "fuel rod" collections of students to act as control blades. The volunteers struck most the ping-pong balls away from the other students, slowing down the reaction and demonstrating the purpose and use of control rods. ANS-UW was invited back for next year's Camp Badger as well.

6.2 Screening of Pandora's Promise

On October 19th, during nuclear science week, ANS-UW screened the nuclear power and science documentary "Pandora's Promise" at the on-campus public theater, the Marquee. The showing was a free event open to the public that would allow student section members to watch this film among people of the local and university communities. About 30 people total showed up to the screening and vast majority were community members. The screening went well and has capped by a open discussion between the community members and the attending representatives from ANS-UW. The questions that were fielded from the community was the best part of the entire event. The movie inspired questions that were in-depth and showed that the community was critically thinking about the nuclear industry.

This was the main community event ANS-UW put on for Nuclear Science Week. In addition, we had our November General Meeting, a youth workshop, and we sent members to participate in the Save the Nukes Summit. Figure 7 is the poster our Communications Officer made and circulated to promote Nuclear Science Week.

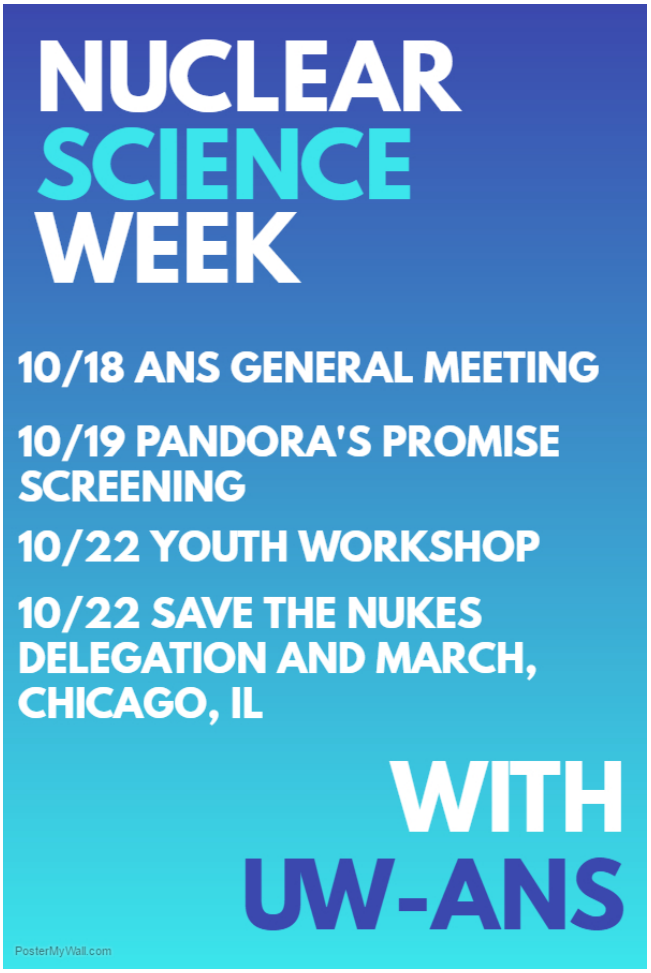


Figure 7: Nuclear Science Week Poster generated by Communications

6.3 Save the Nukes Summit

In October of 2016, ANS-UW sent five members to the Save the Nukes Summit in Chicago, Illinois. They met with members of several nuclear organizations who gathered to discuss the state of the nuclear industry and address measures that could be taken to positively advance it (ANS, Mothers for Nuclear, Nuclear Matters, Women in Nuclear, North American Young Generation in Nuclear, and Environmental Progress). In addition to discussing issues and solutions within the industry, summit attendees discussed different methods of advocacy and personal motivations to support nuclear. The goals of the Summit were were established and unanimous supported: to preserve existing nuclear reactors, build new reactors, and research advanced reactors.

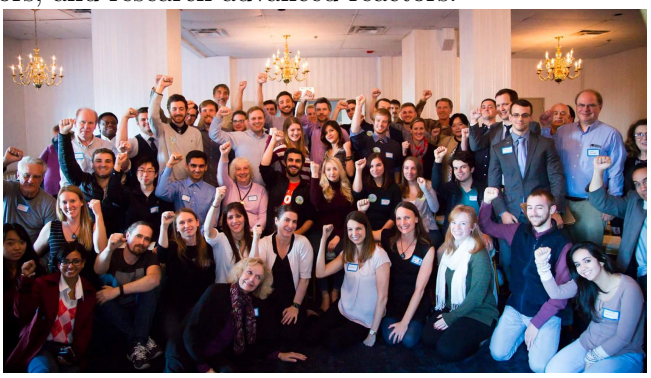


Figure 8: Some ANS-UW members pose with the group of summit attendees

6.4 Inception of the Advocacy Committee

Following the Save the Nukes Summit, the ANS-UW Board of Governors deemed it valuable to form an Advocacy Committee within the student organization. This committee would serve to promote the continuity of nuclear power in the nation and the world. Additionally, this committee served as a means for younger members to get involved and learn more about the industry. The ultimate goal for the committee is to advocate for the support of lawmakers and the community to create a positive image for nuclear science and technology. With this goal in mind, we work to engage students by actively taking part in the industry of which they hope to become professional members.

6.5 Advocacy Committee Flyering

As the first event for the ANS-UW advocacy committee, about 100 fliers were printed, explaining how nuclear energy is more beneficial than other forms, such as solar and wind energy. Members of the chapter were outside of Engineering Hall for about an hour handing out these fliers. With much success, all the fliers were distributed.

6.6 Letters to Illinois Legislators

Following member involvement in the Save the Nukes Summit, ANS-UW hosted a letter writing event to generate ideas and produce letters to Illinois policy makers. Nearly a dozen members of ANS-UW and one non-ANS member attended the event to draft letters. We drafted personal letters to address why each individual supported nuclear and why nuclear was integral to the state of Illinois. Our student section sent the letters to key policy makers: to the main sponsors of the bill to thank and support them, to the members in committee to explain the nuclear position, and to the governor's office to ask for support. The bill was amended and enacted as the Future Energy Jobs Bill.

6.7 Letters to Federal Legislators

Politics plays an enormous role in shaping the future of the nuclear industry. To encourage student involvement and perhaps advocacy in everyday politics, an event was hosted to introduce students to current national legislation related to nuclear energy. They were taught how to write to politicians and news editors, and were then encouraged to voice their opinion on any legislation they were interested in. The outcome included students present writing at least one letter apiece voicing their personal opinions, and many more students sending letters to be sent after the event.

6.8 Earth Day

The ANS UW Student Section attended an Earth Day conference hosted by the Nelson Institute for Environmental Studies. Members volunteered to help advocate at the exhibition which included posters, handouts, and other items pertaining to nuclear advocacy. The exhibition was a great experience for members to speak to members of the community. Being an Earth Day conference, we were surrounded by environmentalist organizations with strong anti-nuclear policies. Many of our members did a great job advocating when faced with criticism by educating and informing the public the truth about nuclear energy. We also met some environmentally concerned members of the public. They were a small contingent of nuclear advocates for environmental reasons, self-styled Rethinking Nuclear.

(a) ANS members pose with community members at their booth

(b) Community members pose with ANS at our booth

Figure 9: Several of groups members volunteered at the Earth Day Exhibit throughout the course of the day

6.9 UWNR Tour for Wisconsin Representatives

Politics plays an enormous role in shaping the future of the nuclear industry. To get the needed support, the ANS-UW Advocacy Committee organized a tour of the UW Nuclear Reactor for Wisconsin state and national politicians and their staffers. The event began with a presentation to the politicians that gave an overview of the industry as a whole, and the role it plays at the University. Various topics were covered, such as the importance of the industry, the challenges it faces, the curriculum that is offered to UW students, and the destination of alumni of the department. The politicians were then taken to the reactor where they received a tour that covered its general physics and operation protocol. At the conclusion of the tour, the politicians were then available for a meet-and-greet between them and students. At this time, students were able to ask questions and express ideas about how they want the future of nuclear to look. Additionally, the politicians were able to provide students advice about how to best advocate for nuclear energy in politics.

6.10 High School Scholarship Essay Contest

ANS-UW held its annual scholarship contest this year with a prompt focus on alternative fuels. The prompt for the contest is as follows:

Uranium is a valuable, rare resource. Uranium 235, the isotope of uranium most valuable to nuclear power plants today composes a mere .7% of all naturally occurring uranium. It has been proposed that the element thorium can be substituted as a nuclear fuel in new reactor designs. Compare and contrast the uses of uranium and thorium as nuclear fuel in nuclear power plants.

The ANS-UW executive board selected one winner for$500 to use for college funds at the school of their choice.

7 Public Service

ANS-UW strives to be an active and positive force in the Madison community. To this end, we try to coordinate community service efforts and engagement with the public.

7.1 Adopt a Highway

ANS-UW participated in Adopt-A-Highway for the thirteenth consecutive year. Members cleaned a two mile stretch of University Avenue between County Highway Q and Old Middleton Road. Per the requirements of the program, participants are required to clean the highway a minimum of three times between April 1st and November 1st every year. We completed the first events in the Spring, Summer, and Fall.

Figure 10: A group of students clean the ANS-UW section of highway

7.2 Nuclear Science Youth Workshops

Over the course of the academic year, ANS-UW holds six workshops for boy and girl scouts, along with other interested youth of high school age and younger. ANS-UW managed to bring in over 230 scouts and youth, not counting the adults that also came with their children through our program this year. This number grew from last year, and we hope to keep this number growing and hold more workshops aimed specifically at girl scouts.

Our workshop consists of five stations and an introductory nuclear science lecture. The attendees were able to tour our research reactor, with both a basic presentation on fission and an in confinement walk around tour. They then were able to tour one of two of our fusion research facilities, either the Pegasus Tokamak facility or Inertial Electromagnetic Confinement Experiment. Next, the workshop attendees received a careers presentation about the vast amount of opportunities available in the field of nuclear science and technology. Lastly, we had two coupled stations, the counting station, where the attendees took radioactive sources and experimentally observed the effects of time distance and shielding, and the cloud chamber station, where the attendees were able to learn about half lives and see radiation in a cloud chamber. We were able to award hundreds of merit badges this year, we hope to continue this tradition of bringing in a large number of scouts and youth in the future.

(a) A student explains how cloud chambers work

(b) A group of student volunteers talk about detection

Figure 11: Many student members volunteer to staff the different facets of the youth workshops

7.3 Family Weekend

Every year in October, the UW-Madison College of Engineering hosts a Family Weekend for the family members of potential College of Engineering students and current families of freshman. This year, ANS-UW was invited to participate and showcase our student organization along with our Engineering Physics Department. We brought outreach materials that explained what our student chapter did and gave some background knowledge of nuclear science and technology. We also had our Radiation Game, where players matched up doses over a year with specific actions like living next to a coal or nuclear power plant or eating a banana. Furthermore, we had our radioactive beanie babies that had sources sewn into them so people at our booth could take a detector and investigate to find which stuffed animals had sources in them. The highlight of the event was the tour of our department's Shock Tube and one of our University's Molten Salt research laboratories. This event exposed about 100 attendees of the event to our chapter of ANS and our department.

8 University Service

8.1 UWNR Tour

In order to further involve our members, especially the first and second year students, ANS-UW offered a tour of the UW-Madison Nuclear Reactor (UWNR). It is a privilege to have this resource on campus, and it was utilized to encourage more involvement within the section and further educate members as to how our research reactor works. There were two tours to accommodate schedules on Friday afternoons. Each tour consisted of approximately fifteen people, split into two groups per tour.

The tour consisted of an educational and introductory power point, one that explains the basics of nuclear power plants and why they are important to generating clean energy. After the presentation, the tour began! Basic operations were explained with the control panel as a prop. The group then proceeded to the pool top, allowing them to look into the reactor pool. To conclude the tour, the water filtration system was explained in detail, and there were plenty of excellent questions to follow. Overall, this attempt to involve our younger members was a huge success, and peaked further interest in ANS-UW.

8.2 Peer Mentorship Program

In March, 2017, some of the students voiced their concerns about the quality of academic advising. From this arose the idea of having a mentorship program in which older students that have already completed most of the coursework mentor the younger ones. It was decided that ANS would facilitate the new mentorship program. Alexander "AJ" Gross, an active member of our student section, was selected as the Peer Mentorship Chair. His responsibilities included obtaining a list of volunteer mentors, reaching out to younger students, and facilitating mentoring meetings. The program was not active until shortly before enrolling for Fall 2017 classes began. This resulted in a low number of students' involvement in the mentorship program. We will continue to operate this program in future

years and implement it prior to enrollment so students have plenty of time to set up a meeting and plan out their future courses.

8.3 Engineering Bash

Within the first week of school, ANS-UW held a recruitment and education event open to UW-Madison's College of Engineering. We handed out pamphlets and gave talks to passing by college students to see if they were interested in learning more about nuclear science or technology and possibly joining ANS. We discussed the what involvement in an ANS student section would look like and tried to welcome all the new students to campus. The event was an overwhelming success over past years, with an addition of over fifty people to our emailing list.

8.4 Engineers Week

During National E-Week, ANS-UW held the annual Mickies SCRAMbler Eating Contest. Participants head to Mickies Dairy Bar where they order the most popular menu item, the scrambler. For every scrambler eaten, ANS-UW and Mickies both donate $1 to charities or other foundations. This is the eleventh year that ANS-UW has held and won the contest. The donation is traditionally made to the American Heart Association. This event does not directly support the nuclear industry, but we feel that it is important for us to remain involved in the community that we belong to. Promoting our public image can help the general public understand who it is that represents the nuclear industry.

8.5 The Heroic Journey of a Beautiful Idea - Michael Shellenberger

This year, the Distinguished Lecture Series hosted Michael Shellenberger in a University-wide talk at the University's biggest venue. ANS-UW made it a point to go to the talk as a group. About 15 of our members attended the talk about the history of nuclear power and the relevancy of nuclear power in today's society. The event concluded in the evening with a conversation with ANS-UW members and Mr. Shellenberger along with some of professors in the Engineering Physics department.

9 Nuclear Support

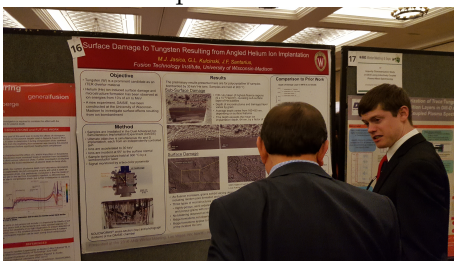
9.1 Annual Meeting

ANS-UW sent three members to the 2016 Annual Meeting in New Orleans, Louisiana. Two of the members had roles to fulfill at the national level. All three of them participated in the Student Sections Committee.

9.2 Winter Meeting

ANS-UW sent seven members to the 2016 Winter Meeting in Las Vegas, Nevada. Again two members had commitments to fulfill at the national level, three members participated in the Student Sections Committee, and five members presented research projects. AJ Gross, Andrew Maile, and Jordan Rein won the Student Design Competition with a Molten Salt Reactor concept.

(a) A UW student member speaks casually with an interested audience about his research



(b) A UW student member discusses his research with a captivated attendee

Figure 12: Several of our members who attended the Winter Meeting participated in the poster session

9.3 Student Conference

We had an outstanding attendance of 26 members at the 2017 Student Conference in Pittsburgh, Pennsylvania. Our attendees ranged from freshman to graduate students in their fourth year. There were seven members that presented either a technical talk or poster. Kalin Kiesling received a commendation in recognition of her outstanding work in leadership and service to both our student section and ANS-National.

Figure 13: The conference attendees for UW pose together for a group picture

9.4 Kewaunee Tour

In the late summer, before the academic semester began, ANS-UW teamed up with the ANS-Wisconsin local section to tour the Kewaunee Power Station in Wisconsin. The tour was an all day event that

included going inside confinement, since the reactor is decommissioned, and go inside the actual control room. In total, we had ten members from our student section attend.

9.5 Point Beach Tour

Before our winter break, our student section organized a tour to the Point Beach Power Station in Wisconsin. We had approximately 20 of our members attend where they got to go inside the power plant during a day of normal operation. This tour included a short presentation about the economic of the Point Beach Power Station and a walk-through of their Energy Center, where they displayed our the electricity is produced from a nuclear reactor.

10 Social Events

10.1 Summer Lake Day

On July 23rd, 8 ANS members and 3 guests enjoyed a beautiful day on Lake Mendota. Attendees rented kayaks and paddleboards from Memorial Union's Hoofer Club to float around the lake and soak up the sunshine. After a few hours on the water, everyone headed up to a board member's house to nearing the Union for burgers, brats and cold beverages. The afternoon concluded with a bonfire on the Picnic Point peninsula. This event connected members who were staying in Madison for the summer and started what will likely become an annual event on the lake.

10.2 Fall Pic-Nuke

This fall's Pic-Nuke was another great success. Over 80 people attended the event on September 16th, 2016. The glorious Friday evening included great food and great company. Burgers, brats, and beverages were served at the Vilas Park shelter as members of our student section took part in our semi-annual BBQ social. Put on entirely by the executive board, the event provided students and faculty the opportunity to become acquainted in an informal setting. Pic-Nuke has been a tradition for many decades in the UW-Madison ANS chapter, with one in early September and another in early May before finals. The fall social strove to get students interested in upcoming ANS events, while the spring event serves as a farewell to graduating students and those leaving Madison for the summer.

Figure 14: A group of ANS members playing frisbee at Pic-Nuke

10.3 Schuster's Farm

On October 21, 2016, six of our members ventured 15 miles east of Madison to Schuster's Farm. The owners of this farm put on Halloween festivities every October which involve a 15 acre corn maze, a haunted forest, hayrides, and a shop with pumpkins and treats for sale. ANS-UW was fortunate enough to participate in this abundance of fun activities! The night was cool (about 45F) with clear skies, a perfect night to wonder the two-phase corn maze. After 90 minutes of exploring the dead-ends and misleading paths of both sections of the maze, we found the exit and treated ourselves to hot cider and 90 cent donuts.Visiting Schuster's farm has been an annual tradition in our chapter since 2011. This much needed break provided a great opportunity to get away from the library and enjoy the fresh farm air.

Figure 15: A group of ANS members posing with their pumpkins from Schuster's Farm

10.4 Hockey Game

On January 20th, ANS members gathered for a hockey game between Minnesota Gophers vs. the Wisconsin Badgers at the Kohl Center. This was the first time the student section attended a hockey game. Members new to Badger hockey learned the chants and traditions, while the teams battled it out on the ice. This event will likely become a regular tradition in the ANS chapter.

10.5 Chili Cook-off

This February, the Essen Haus Restaurant hosted their 4th Annual Chili Cook-off in Madison, WI. Eighteen cooks, each with their own homemade recipe, gathered to have their chili judged by professionals and contest attendees. This year's chili was derived from an alumnus's masterpiece, but made with homegrown beef and pork off the vice president's family farm. The Friday night before the competition, a few executive officers got together to cook the chili. ANS-UW members of all ages made it out to the Essen Haus on Saturday to vote for the "Dark Matter" chili. In the end, our chili won first place in People's Choice and a cash prize with 26 votes! This was the 4th time the ANS executive board took the People's Choice Award. The Chili Cook-off has become a popular event for both the executive board and members to spend time with one another, try some great chili, and help the club win the competition.

Figure 16: A member poses for his "Chilly Chili" picture

For subsidized entry fees contestants and chili test-tasters could post a picture to the Essen Haus Facebook page. Such a picture must show the person outside in Summer gear in the middle of Winter.

10.6 Wednesday Coffee and Donuts

For many Wednesday is the most mundane of days. In the middle of the week when ambitions run low, the ANS student section provides free coffee and doughnuts to its members and other department friends. Between 10 and 11:30 am, undergrad and graduate students gather in the Engineering Research Building for Greenbush doughnuts. Conversations about nuclear energy and politics resound down the hallway as faculty and students line up for coffee refills between classes. This weekly tradition has been around since 2005 and continues to stimulate connections within the Engineering Physics Department.

10.7 Mickie's Dairy Bar

In addition to the regular social outings, ANS-UW has a long-standing tradition more than a decade old of weekly breakfasts at Mickie's Dairy Bar. Students, faculty, and occasionally some ANS guests or visiting alumni meet at 7 AM every Friday morning at Mickie's Dairy Bar. Attendees enjoy a hearty breakfast just off engineering campus to start the final day of the week off right.

10.8 Lunch with Ian Hamilton

Ian Hamilton is a graduate student at Purdue University; he is also the CEO of Atlas Energy Systems, LLC. Ian was invited to speak on campus about his work in developing radioisotope batteries and his experience as an entrepreneur in the nuclear industry. Following his seminar, ANS-UW took him out to lunch. This afforded the members of our student section a chance to interface with someone innovating in their field in a neutral and inviting setting.

11 Future Work for ANS-UW

As a student section, we are very proud of the work we have done and the improvements we have made; however, it is important for our members and our industry that we do not become complacent in our minor successes. The facets of ANS-UW student section that we hope to immediate improve and expand are numerous.

- Community Service
- Nuclear Advocacy
- Intra-University Collaboration

ANS-UW takes pride in our public service work; however, we have not been able to give our members as many opportunities to give back to our communities as we would like. To this end, the Board of Governors formed a list of potential community service projects to undertake in the coming year: Little Houses, Habitat for Humanity, St. Vincent de Paul, Feed My Starving Children. These are either community service projects that ANS-UW has done in the past or projects we believe our members would find value in pursuing in the future.

This year we formed our Public Advocacy Committee to focus on how ANS-UW can inform the public about nuclear science, specifically regarding nuclear power industry an policy. We would like to expand the work of this committee to foster a positive environment for nuclear power in Wisconsin and to assist in the maintenance our nation's nuclear fleet. To the first end, we would plan to reach out to more policy makers in Wisconsin, so they understand the potential of nuclear energy. Second, we plan to communicate more effectively with organizations working to keep nuclear plants online.

In recent years, ANS-UW has had varying amounts of communication with other student organizations on the UW Campus: AIAA, WIN, AIChE (American Institute of Chemical Engineers). This year we began to develop a collaborative development with student section for Material Advantage. To further benefit the student members of ANS-UW, we plan to reach out to other student organizations (primarily those with overlapping interests) to foster a greater social structure within our college and to provide our members with more professional development opportunities.

12 Conclusion

The American Nuclear Society, University of Wisconsin-Madison Student Section has had over 50 years of experience providing members the opportunity to reach out to the general public, volunteer in the community, increase professional interaction, and even learn a little more about nuclear science themselves. The Student Section has consistently received thanks and praise from members of the community as well as parents and students at events. All of the members of the society have been nothing short of extraordinary this year and have dedicated a large amount of their time to help run our numerous events. With the outstanding success of new events this year, the continued support of old traditions, hosting the 2016 student conference, and helping change nuclear policy in Wisconsin; ANS-UW will continue to set an example for newer student sections from all kinds of institutions. ANS-UW is prepared for several more years of just as much, if not more, involvement.