



THERMAL HYDRAULICS DIVISION NEWSLETTER

Fall 2014

Message from the Chair



Dear Colleagues,

At the conclusion of the recent ANS Annual Meeting in Reno, I had the privilege of becoming Chair of the Thermal Hydraulics Division (THD). At the June meeting in Reno, I was given the opportunity to make a brief presentation on the success of

our Division to the ANS Board of Directors. In the presentation, it was highlighted that the membership of THD steadily grew over the past several years considering seasonal fluctuation, and we now have approximately 1100 members, with nearly 210 student members, thanks to the collective efforts of many of our division members. In addition to our membership growth, I was pleased to report the increased participation of young and student members in all division areas and the continued support for student scholarship and student travel to the national meetings. I also thank the previous leaders in THD for their hard work and endeavors to keep THD technically strong and financially healthy.

The 2014 ANS Annual Meeting and the Advances in Thermal Hydraulics (ATH-14) Embedded Topical Meeting at Reno were one of the most successful showings for the THD sponsoring twelve very well attended sessions with a total of 77 papers including 58 full ATH papers. The quality and breadth of work presented at these meetings was remarkable. I would like to thank the organizers and paper reviewers for the successful 2014 THD annual gathering in terms of number of quality papers and session participants. For the upcoming 2014 ANS Winter Meeting in

Anaheim, I ask you to look at the Winter Program for the Meeting and join us in Anaheim, California, for our 11 technical sessions and 59 scheduled presentations. There will be two panel discussion sessions held on Monday and Tuesday, thanks to Drs. Wade Marcum, David Aumiller, and Elia Merzari for their organizing efforts and time. I encourage all of you to participate in these sessions and to take some time to have interaction with the invited panel members. There are a number of upcoming meetings of interest to our THD community, especially NUTHOS-10 to be held in Okinawa, Japan, in December 2014, the 2015 ANS Annual Meeting, and NURETH-16 to be held in Chicago, from August 30 to September 4, 2015. Note that this NURETH-16 meeting is the THD stand-alone conference and we look forward to your participation in and your support of that meeting in Chicago 2015.

In addition, note that the division is sponsoring one session “Young Professional Thermal Hydraulics Research Competition” during the ANS Winter Meeting in Anaheim. The session will be held on Wednesday November 12 with 7 papers to be presented, thanks to Drs. Rui Hu and Phillippe Bardet for their organizing effort. I strongly encourage you to attend the session in support of the young members.

Some special thanks and congratulations are in order: First, I got the help and support from my immediate predecessors, Dr. David Aumiller and Prof. Xiaodong Sun, and I thank them for sharing their experience and thoughts with me so that I can serve the division better. Second, many thanks to Honors and Awards Committee (HAC) members and HAC chair Prof. Hisashi Ninokata for their extra effort and time to enable the success of these award nominations. Third, congratulations to Prof. Jose

Reyes for receiving the 2014 THD Technical Achievement Award. He certainly earned the award for his excellent technical contributions and support to the THD community. Lastly, congratulations to the 2014 Best Paper Award recipients for the outstanding quality of the research papers.

I believe that this Newsletter is only one of the ways we facilitate communications among our division membership. The 2014-15 officers, Prof. DuWayne Schubring (vice chair/chair elect), Prof. Seungjin Kim (Secretary), Dr. Kurshad Muftuoglu (Treasurer) and I welcome your feedback on any matter in which the Division can help you in your professional development, or you can help the Division and your fellow members.

I am looking forward to seeing you at Anaheim.

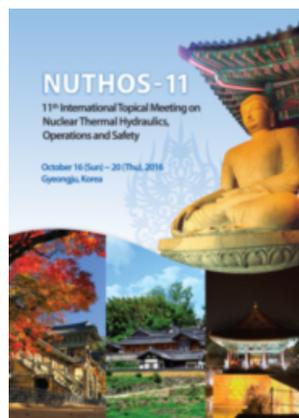
Si Young Lee
Savannah River National Laboratory
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2014-2015 THD Chair
ANS Thermal Hydraulics Division

Upcoming THD Conferences

- 2014 ANS Winter Meeting (Anaheim, CA): Nov. 9-13 2014
- NUTHOS-10 (Okinawa, Japan): Dec. 14-18, 2014
- NURETH-16 (Chicago, IL): Aug. 30-Sept. 4, 2015
- 2015 ANS Annual Meeting (San Antonio, TX): June 7-11, 2015

In addition to these conferences, NUTHOS-11 is being organized as follows:

- Conference Venue: Gyeongju, Korea
- Conference Date: Oct. 16-20, 2016
- Honorary Chair: Prof. Jong H. Kim (KAIST)
- General Chair: Prof.



- Moo Hwan Kim (POSTECH, and KINS)
- TPC Chair: Dr. Chul-Hwa Song (KAERI).

Treasurer's Report

2014 Division Financial Report

- Balance forward from 2013: \$17,706

2014 Income:

- Revenue from 2014 member allocation (through 6/30/2014): \$1,171
- Additional member allocation estimate (based on Dec2013 count): \$1,169
- Estimated revenue from ATH'14 (based on 58 papers): \$2,900

- Total Estimated Income: \$5,240

2014 Division Budget:

(approved: \$4,800, amended \$5,300)

The THD Executive Committee approved the following budget at the 2013 Winter Meeting and approved additional \$500 for a second best paper on 10/9 (electronic voting):

- Awards and plaques \$2,300
- Donation to Scholarship/NEED: \$500
- Student support: \$2,500
(including \$500 for HQ-directed support for ANS national meetings, \$500 for Student Conference, and \$1,500 for THD-directed student travel support for 2014 Annual and Winter meetings, including ATH.)

2014 Expenses:

THD expenses occurred in 2014 as of October 23rd are as follows:

- Awards and plaques \$0
- Donation to Scholarship/NEED: \$500
- Student support: \$1,300
(includes \$500 for HQ-directed and two \$150 THD-directed allocations. However, my notes indicate that there should be three students to be funded. Additionally, 7 students requested travel support for the Winter meeting.)
- Other expenses (USPS postage): \$8

(e) THD-directed student support: \$1,500 (same as 2014)

Kurshad Muftuoglu,
kurshad.muftuoglu@ge.com
2014-2015 Treasurer
ANS Thermal Hydraulics Division

Honors and Awards Committee Report

2015 Division Budget Proposal

Updated based on actual spending through June 30, 2014 provided by ANS Headquarters

2015 Estimated Income:

Only income estimated for 2015 is the fund from member dues allocation. Based on December 2013 count, \$2,340 is expected. Revenue from NURETH meeting is not credited with the possibility of financials might not be final by the end of the year.

Expected Balance Forward from 2014: \$18,276

Forwarded balance estimate includes income in 2014 of \$2,900 from ATH based on 58 papers. It also assumes, spending on awards/plaques as budgeted and student support as projected.

2015 Estimated Budget

The estimated budget for 2015 is \$4,800, \$500 less than the amended 2014 budget. It is based on the following estimates:

- (a) Awards and plaques: \$1,800 (TAA and only one best paper awarded)
- (b) Donation to ANS Scholarship/NEED: \$500 (same as 2014)
- (c) ANS-national directed travel support: \$500 (same as 2014)
- (d) ANS Student Conference: \$500 (same as 2014)

2014 Thermal Hydraulics Division (THD) Technical Achievement Award

The Technical Achievement Award is the highest award given by the THD. It is presented annually to a member of the THD in recognition of outstanding past or current technical achievement. It is based on a major contribution to the state of the art, an important publication, a major technical achievement, or a sustained record of accomplishment and technical excellence in the art or science of thermal hydraulics.



This year, we are pleased to recognize Dr. Jose N. Reyes, Chief Technology Officer and Co-Founder of NuScale Power and the Schuette Endowed Chair Professor from Oregon State University as the 2014 Achievement Award winner for his outstanding contributions to the areas of experimental scaling, two phase flow, advanced passively safe designs, small modular reactors, and thermal stratification and, as indicated by the citation that will appear on his award plaque, "in recognition of his exceptional contributions to the understanding of thermal hydraulics phenomena of significance to advanced nuclear reactors and for his impact on the thermal hydraulics community as a researcher, educator, and leader" promoting technical excellence and international scientific exchanges.

As TAA is an ANS National Award, Prof. Reyes will be formally recognized at the Opening Plenary &

President's Special Session, on Monday November 10, 2014 in the ANS 2014 Winter Meeting.

2014 Best Paper Award

The Best Paper Award is given annually for the best full paper presented at one of the previous Division sponsored thermal hydraulics sessions or topical meetings. The award is made on the basis of originality, creativity, impact and scientific integrity. Recommendations for the Best Paper Award come from chairs of technical meeting sessions and from members at-large (through the Program Committee Chair). THD procedures for THD Best Paper selection require that at least one of the authors be a member of ANS. See <http://thd.ans.org/Bylaws/Procedures.htm#THP9.4>.

This year, because of the postponement of the selection of the 2013 award to this year, we have selected the following two best papers for the 2014 award, one from the NURETH-15 conference (2013) and the other from the ATH '14 (2014):

“Distributed Fiber Optic Temperature Sensing for CFD Code Validation” by S. Lomperski, C. Gerardi and D. W. Pointer, published in the Proceedings of the 15th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-15), Pisa, Italy, May 12-17, 2013; and “Experiments on the Effects of a Spacer Grid in Air-Water Two-Phase Flow” by J. Wheeler, T. Worosz and S. Kim, published in the Proceedings of the Advances in Thermal Hydraulics – 2014 (ATH '14), Reno, Nevada, USA, June 15-19, 2014.

THS Award Ceremony and TAA Lecture

Recipients of the THD awards will be honored at the THD Award Ceremony, which will be held immediately following the Tuesday morning technical session “General Thermal Hydraulics – II” on November 11 at the upcoming 2014 ANS Winter Meeting. During this event, Professor Reyes will honor us with the TAA Lecture, "[Development of Design Certification Test Programs](#)". Please join us in congratulating all the THD award recipients and

enjoy the TAA lecture, November 11. Congratulations to all our 2014 honorees!

Hisashi Ninokata
Politecnico di Milano
2014-2015 Honors and Award Committee Chair
ANS Thermal Hydraulics Division
hisashi.ninokata@polimi.it

Program Committee Report

The strong THD presence at the ANS national meetings continues after a very positive 2014 ANS Annual Meeting where the embedded ATH'14 Topical Meeting was successfully held. The interest and participation to the technical sessions organized by our division have maintained at a very high level at the upcoming ANS Winter Meeting 2014. Thanks to the support of the session organizers, contributing authors and panelists, and reviewers, the program committee has put together another strong arrangement of sessions for the meeting.

At the 2014 Winter Meeting in Anaheim, THD is organizing a total of nine contributed summary sessions and two panel sessions. A total of 74 summaries were submitted, out of which, based on the reviewer recommendations, a total of 58 summaries are expected to be presented at this Winter Meeting. Again, let us take this opportunity to thank the session organizers and reviewers for their wonderful efforts: over 200 reviews were completed for this Winter Meeting. These sessions, in chronological order, are:

General Thermal Hydraulics – I [Mon. p.m.]
Experimental Support for System Code Development and Validation: IETs and SETs – Panel [Mon. p.m.]
General Thermal Hydraulics – II [Tues. a.m.]
Computational Thermal Hydraulics – I [Tues. p.m.]
Experimental Thermal Hydraulics – I [Tues. p.m.]
Thermal Hydraulics Analyst 2.1 – Panel [Tues. p.m.]
Experimental Thermal Hydraulics – II [Tues. p.m.]
Computational Thermal Hydraulics – II [Wed. a.m.]
Experimental Thermal Hydraulics – III [Wed. a.m.]

Computational Thermal Hydraulics – III [Wed. p.m.]
Young Professional Thermal Hydraulics Research
Competition [Wed. p.m.]

The 2015 Annual Meeting will be held in San Antonio, TX. For that meeting our division is planning to sponsor seven summary sessions:

- 19a. Two-Phase Flow
- 19c. Thermal Hydraulics in Non-traditional Nuclear Applications
- 19d. Computational Thermal Hydraulics
- 19e. Experimental Thermal-Hydraulics
- 19f. Advanced System Code Development and Analysis
- 19g. Computational Fluid Dynamics Verification and Validation
- 19h. Thermal-Hydraulics: General

In addition to the summary sessions, one panel session is also planned:

- 19b. Thermal Hydraulics Education [Panel]

A copy of Call for Papers for this Annual Meeting can be found at http://www.ans.org/meetings/c_1. The website (<http://epsr.ans.org/meeting/?m=144>) is open for summary submission. The published deadline for the submission is January 9, 2015.

The 10th International Topical Meeting on Nuclear Thermal Hydraulics, Operation and Safety (NUTHOS-10) will be held December 14-18, 2014 in Okinawa, Japan. Please see the conference website <http://www.nuthos10.org> as well as a report in this newsletter for details.

The 16th Internal Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-16) will be held in Chicago from August 30–September 4, 2015. An updated Call for Papers is attached to this newsletter. More details about the conference are available at <http://nureth16.anl.gov/>.

In Anaheim, CA next month, the THD Program Committee meeting will be held on Sunday November 9, 2014, starting at 2:30 p.m in room

Zambezi. Anyone interested in the program committee activities are invited to participate.

Finally, we would like to express our gratitude to all of the colleagues who devote your time to the Division's activities. Thanks to your dedicated efforts, we are able to put together strong programs at many meetings. These meetings remain as the prominent venue for scientific information exchange in the thermal-hydraulics community. As always, we would like to encourage our members to actively participate by attending our meetings, submitting papers/summaries, volunteering to organize sessions, and supporting the peer-review of the papers. We look forward to many more successful years.

Xiaodong Sun
Ohio State University
2014-15 THD Program Committee Chair
Elia Merzari
Argonne National Laboratory
2014-15 THD Program Committee Assistant Chair
PCChair@thd-ans.org

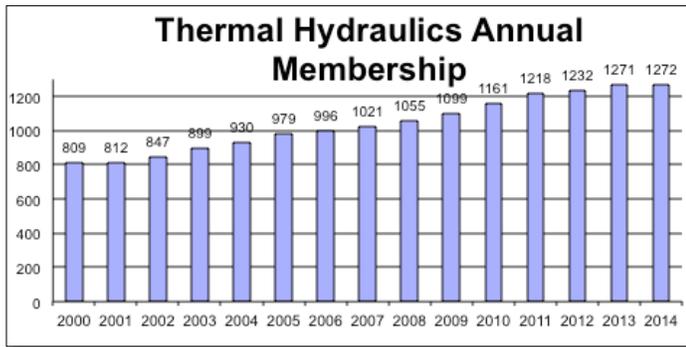
Report from ATH '14

Special ATH'14 Issue is to be published in Nuclear Technology. As of Oct. 2014, 17 manuscripts have been submitted for publication consideration. Of these, 7 papers have been accepted, 8 are in various stages of review and/or revision, and there are 2 papers that the Editors are having difficulty finding reviewers for and thus, have not yet been reviewed. The Editors expect that the Special Issue will be published online around March 2015 and in print in June 2015.

Donna Post Guillen
Idaho National Laboratory
ATH '14 Program Chair
donna.guillen@inl.gov

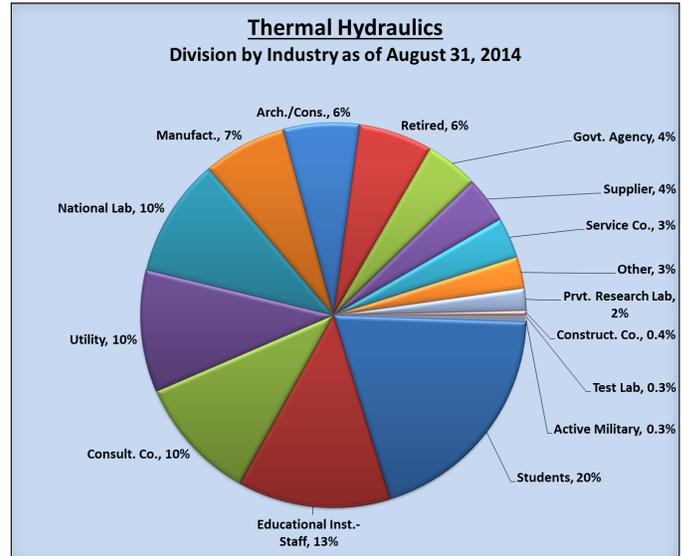
Membership Committee Report

As shown in the following figure, after years of significant growth, the membership trends for THD have shown signs of leveling off. The THD membership numbers must be viewed in the context of stagnant to slight reductions in overall ANS membership. This can most easily be seen in the increasing fraction of ANS members that have chosen to be members of THD. From 2000 through 2013, the percentage of ANS members that chose to THD members has monotonically increased from 7.2% to 10.6%. The student membership in THD has similar trends to the overall membership. It has increased approximately 80% from 2004 to 2012 before leveling out.



In addition to healthy overall and student membership trends, THD members come from all aspects of the nuclear industry. As shown below, THD has very good representation among students, universities, consulting firms, National Labs, utilities, and architects/construction firms. The THD cordially invites you to become a member of the Division and participate in the Division's activities. Current activities of the Division include paper review, paper presentation, organizing and chairing technical sessions, sponsoring topical meetings, serving on the various subcommittees, including the very active program and honors and awards committees, and supporting student conferences. If you are interested in becoming a member of THD, you can contact ANS membership directly. If you are currently a member and interested in any of the

above activities, please contact any of the THD Officers.



David Aumiller
 Bettis Atomic Power Laboratory
 2014-2015 Membership Committee Chair
 ANS Thermal Hydraulics Division
 david.aumiller@unnpp.gov

Young Professional Report

The Thermal Hydraulics Divisions has organized its annual "Young Professional Thermal Hydraulics Research Competition", co-sponsored by the ANS Young Member Group, to be held during the 2014 ANS Winter Meeting. This competition, jointly sponsored by the YMG, includes seven accepted summaries from six unique organizations, demonstrating the sustained interest in this activity. For more information about this competition, please contact: Rui Hu (rhu@anl.gov), Wade Marcum (Wade.Marcum@oregonstate.edu) or Philippe Bardet (bardet@gwu.edu).

The Young Members Group (YMG) is a division of the American Nuclear Society (ANS). YMG provides young professionals with opportunities to expand their technical knowledge and network with

internationally recognized authorities and industry leaders. Part of YMG's mission is to collaborate with other Divisions and Groups in developing technical and non-technical content of particular interest to young professionals for topical and national meetings (for more information on YMG's mission check <http://ymg.ans.org/about-us/our-mission/>).

All regular ANS members 35 years old or younger, or within 5 years of their last degree are YMG members. Moreover, YMG is happy to report that the ANS board recently approved a new initiative for all ANS graduate students to be members of the group as well. It is our hope that many graduate students of THD will actively participate in our activities. The next YMG executive committee meeting will be held In Anaheim on Monday November 10th at 11:30 a.m. - 1 p.m. Location: Magic Kingdom 1. Please come and join us!

Among the many activities that are currently ongoing with YMG are: the planning for the Young Professionals Congress 2015 (to be held November 8-12 2015 in Washington, DC), initiatives to foster young member division involvement, and a new scholarship to honor the late Hans Loewen. We are also looking for ways to improve our communication strategy, and We are always looking for energetic young members to get involved in governance. If you are interested in this opportunity or any activities of YMG contact

Rui Hu and Elia Merzari
Elia Merzari: emerzari@anl.gov.
Rui Hu : rhu@anl.gov

Website Report

The official website of the ANS Thermal Hydraulics Division is located at <http://thd.ans.org>. The THD committee membership and minutes, conference announcements, newsletters, and awards are all updated as they change throughout each year. The website is meant to provide up-to-date information on the division's activities. Recent announcements

include the 2014 Young Professional Thermal Hydraulics Research Competition announcement, call for papers to the TH Topical Meeting on Advances in Thermal Hydraulics announcement, and an announcement for NUTHOS-10 and NURETH-16, respectively.

Moreover, the division continues to maintain an online directory of members who are or have been active in division activities at <http://thd.ans.org/people.html>. To update your information or to be included in this directory, please contact the THD Webmaster.

Wade Marcum
Oregon State University
2014-2015 Webmaster
ANS Thermal Hydraulics Division
wade.marcum@oregonstate.edu

Division Contact Information

Current Division Officers and Executive Committee members are listed below.

Current Year THD Officers (June 2014 – June 2015)

Division Chair:
Si Young Lee, si.lee@srnl.doe.gov
Vice Chair/Chair-Elect:
DuWayne Schubring, dlschubring@ufl.edu
Secretary:
Seungjin Kim, skim@psu.edu
Treasurer:
Muftuoglu, A. Kurshad, kurshad.muftuoglu@ge.com

Executive Committee Members

Fan-Bill Cheung (2017) fxc4@psu.edu
Jong Kim (2017) jongkim@mail.kaist.ac.kr
Si Young Lee (2015) si.lee@srnl.doe.gov
DuWayne L. Schubring (2015) dlschubring@ufl.edu
Xu Cheng (2015) xu.cheng@kit.edu
Francesco D'Auria (2015)

francesco.dauria@dimnp.unipi.it
Paolo Ferroni (2017) ferronp@westinghouse.com
Takashi Hibiki (2015) hibiki@purdue.edu
Seungjin Kim (2015) sxk86@psu.edu
Kurshad Muftuoglu(2015)
kurshad.muftuoglu@ge.com
Donna P. Guillen (2017) donna.guillen@inl.gov
W. David Pointer (2015) pointerwd@ornl.gov
Chul-Hwa Song (2015) chsong@kaeri.re.kr
Igor A. Bolotnov (2016) igor_bolotnov@ncsu.edu
Lane B. Carasik (2016) lcarasik@tamu.edu
Elia Merzari (2016) emerzari@anl.gov
Michio Murase (2016) murase@inss.co.jp
Donald Todd (2016) donaltdodd@numerical.com
Wade R. Marcum (2017)
wade.marcum@oregonstate.edu
Hans Gougar* hans.Gougar@inl.gov
* *Chair of the ANS Professional Divisions
Committee, ex officio member without vote*

Committee Chairs (June 2014– June 2015)

Program Committee:
Xiaodong Sun, sun.200@osu.edu
Honors and Awards Committee:
Hisashi Ninokata, hisashi.ninokata@polimi.it
Nominating Committee:
David Aumiller, David.aumiller@unnpp.gov
Membership Committee:
David Aumiller, David.aumiller@unnpp.gov

The list of contact information is provided by the Nominating Committee. The Nominating Committee is responsible for the nomination of THD members to leadership positions on both the Program and Executive Committees. The THD would like to encourage members interested in becoming more involved to contact one of the officers listed above. In particular, the division is usually in need of volunteers for technical meeting session organizers and paper reviewers.

David Aumiller
Bettis Atomic Power Laboratory
2014-2015 Nominating Committee Chair
ANS Thermal Hydraulics Division
David.aumiller@unnpp.gov

Student Involvement Report

Annual Winter Meeting Poster Session:

The ANS 2014 Winter Meeting will feature the annual student poster session that will include THD relevant posters. This poster session allows for undergraduate and graduate students to attend the winter meeting and present their research or professional activities. It is estimated that there will be at least 5 relevant THD posters. The poster session are sponsored and hosted by the Education, Training, and Workforce Development Division and the Alpha Nu Sigma National Honor Society. Additionally, the poster session will be at 11 a.m. to 1 p.m. in the Exhibit Hall on Tuesday November 11th.

ANS 2015 Texas A&M Student Conference:

The 2015 student conference will be held at Texas A&M University on April 9-11, 2015. The theme of the conference is “Powering Tomorrow Together” and will feature a focus on the international growth of nuclear applications and power. The conference will feature technical sessions similar to the national meetings and is expected to have several THD relevant sessions. The conference website is at <http://engineering.tamu.edu/nuclear/about/ans-student-conference>. If you are interested in being a reviewer for the research summaries submitted to the conference, please email ANStechical2015@gmail.com with your contact information.

Additionally, the Student Section Committee and the Texas A&M Student Conference planning committee expresses great appreciation to THD for its past and current support of the ANS conferences.

Community News

Introducing a young member to the THD community

My name is Paul Harmon. I am a student member of the Thermal Hydraulics division from Oregon State

University (OSU) pursuing a master's degree in nuclear engineering. As a native Oregonian, it is with pleasure that I recently returned to the Willamette Valley. I travelled out of state for my undergraduate degree in mechanical engineering at Grove City College in Western Pennsylvania. Studies there included fundamental fluid dynamics and mechanical vibrations. After graduation, I moved to Boston, Massachusetts and found employment at Axcelis Technologies, Inc. designing and detailing systems in the source region of ion implanters. After working there for two years and gaining valuable experience in new product design, I accepted a department fellowship sponsored by the Nuclear Regulatory Commission to study nuclear engineering at OSU. Having returned to the west coast, I am now taking classes and conducting research in the area of mechanical vibrations due to fluid flow.

member of ASME, serving as president my senior year. This opened up opportunities for participating in engineering competitions and STEM outreach to grade-school children. I hope to participate in and support the American Nuclear Society in the near future.

This spring I conducted experiments in support of research in plate-type fuel for Idaho National Laboratory. Using strain gauges applied to the surface of various thin plates in thin fluid channels and supporting their long edges using specific variations of point and line contacts, I observed and recorded plate vibration after plucking them in air and water. After transforming the data to the frequency domain, I determined their natural frequencies and reported the results with confidence intervals based on variations in measurements over multiple tests. This testing has helped me to appreciate some of the nuances of creating and conducting an experimental method with numerous factors that will be useful in developing my thesis research.

There are many benefits of living in the Pacific Northwest, including scenic hiking, excellent skiing, easy biking, and wonderful tide pools on the coast. I enjoy these activities immensely, and take advantage of them when I can. Football was a formative sport through college, teaching me the value of close teamwork and perseverance in the face of adversity. I continue to enjoy following college football. As an undergraduate, I was an active