



Your THD Leadership Team

We all thank you for joining THD and look forward to working with you to advance our field. Please do not hesitate to reach out to anyone on the leadership team with suggestions or if you would like to get involved.

Officers

Chair

Chul-Hwa Song
chsong@kaeri.re.kr

Vice Chair/Chair-Elect

Wade R. Marcum
Wade.Marcum@oregonstate.edu

Secretary

Elia Merzari
emerzari@anl.gov

Treasurer

Bao-Wen Yang
bwy01@deltaenergygroup.com

Immediate Past Chair

Dave Pointer
pointerwd@ornl.gov

Executive Committee

Terms Expiring June 2020

Yang Liu
John C. Luxat
Annalisa Manera
Hisashi Ninokata
Piyush Sabharwall

Terms Expiring June 2021

Fan-Bill Cheung
Yong Hoon Jeong
Dillon R. Shaver
Xiaodong Sun
Mathew D. Zimmer

Terms Expiring June 2022

Fatih Aydogan
Igor Bolotnov
Lane Carasik
Yassin Hassan
Robert P. Martin

Standing Committees

Technical Program Chair

Igor Bolotnov

Honors & Awards Chair

DuWayne Schubring

Webmaster

Marilyn Delgado

YMG Liaison

Mathew D. Zimmer

A Message from the Chair

Dear Colleagues,

It is with a great privilege for me to deliver this message to you as the Chair of the Thermal Hydraulics Division (THD) for 2019-2020 term. I would like to begin with sincere appreciation to all THD members for your continued support and dedication toward the success of our Division. In particular, I would like to express my special thanks to those who volunteer for our Division activities, including those who serve as paper reviewers, organize technical sessions, and those who actively participate in various THD committees work. I also would like to take this opportunity of appreciating Dr. W. David Pointer, our outgoing division chair, for his outstanding contributions over the years and Dr. Elia Merzari, our outgoing PC chair, for his unlimited efforts of advancing our division professionally for three years.

Thanks to you, our Division has been and continues to be one of the strongest professional divisions of ANS indicating the second largest division following OPD in terms of division revenue as of 2018. As reported in previous newsletters, our Division membership has been growing rather steadily, one of the six largest divisions in terms of membership, while maintaining steadily the number of membership over the last several years in consideration of the fact that ANS membership has suffered from a certain decrease during the same time period.

In fact, as of December 2018, we reached a record of 1291 members in our membership, which represented 5.9% of the total ANS Division membership. I am also quite encouraged to find that more than 28% of our Division's membership is comprised of young members including current students and recent graduates, who are the future of THD.

We are moving very well forward to have another successful year in Division's activities on technical meetings. In 2019 ANS Annual Meeting in Minneapolis, we had 45 presentations, including one panel



session on scaling methodologies for SET and IET, in 12 different technical sessions. In 2019 ANS Winter Meeting in Washington, DC, a total of 78 summaries out of 91 summaries submitted are expected to be presented in 17 different technical sessions, which include two panel sessions on micro-reactors and educational issues and challenges.

In August this year, NURETH-18 was held very successfully in Portland, Oregon, USA. In the meeting, 604 papers were finally selected and presented among 832 abstracts and 651 draft papers submitted. We thank all the organizers, TPC members and volunteers for their time and effort in maintaining highest quality of the NURETH program, which is one of our flagship meetings and was recently

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Membership Committee Report

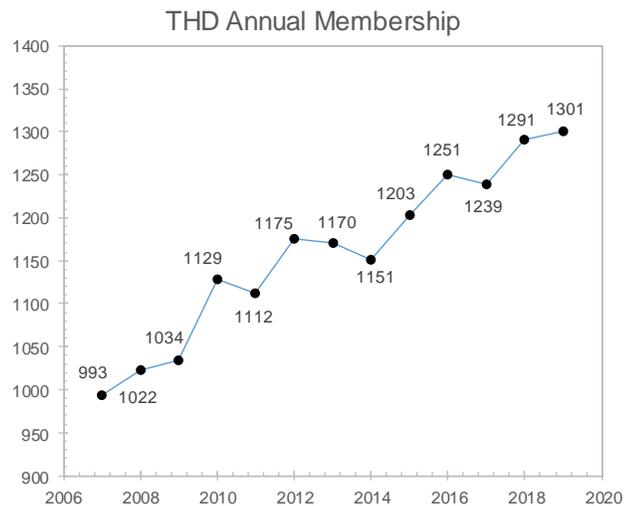
Membership of the ANS Thermal Hydraulics Division is tracked based on membership renewals and applications submitted during each calendar year.

The most recent available data are from 2019, which indicate a total of 1213 members, down from 1291 in 2018.

Over the past decade, THD membership has increased by nearly 20% (compared to the nearly 5% drop in ANS as whole).

Continued membership support is vital to our furthering the mission of our division. All THD members are encouraged to contribute to the THD-sponsored meetings, encourage colleagues to join ANS and THD, and to participate in THD governance as their time permits.

W. Dave Pointer
Oak Ridge National Laboratory
THD Membership Committee Chair (2019-2020)
pointerwd@ornl.gov



Message from the Chair, cont.

recognized as one of the three eminent topical meetings within the whole society by the ANS board members. During the NURETH-18 conference, Drs. Bao-Wen Yang and Xiaodong Sun have been recognized as new NURETH Fellows for their outstanding contributions to numerous NURETH conferences since 1980. Ad-memoriam sessions have also been organized during the NURETH-18 conference celebrating the legacies of three giants who have recently passed away, Prof. Bal Raj Sehgal (Feb. 26, 2018 at age 84), Prof. Dr. George Yadigaroglu (Oct. 25, 2018 at age 80) and Prof. Geoffrey F. Hewitt (Jan. 18, 2019 at age 85), and honoring their remarkable contributions to our field.

There is so much going on with ANS topical meetings and conferences. NURETH-19 will be held in Brussels, Belgium in August 2021 based on the recommendation by the division Conference Selection Committee followed by the approval of the division EC and the NPC screening subcommittee. Some other eminent conferences will also be held next year: ATH'20 in Paris, France and ICAPP'20 in Abu Dhabi, UAE, both next March, and NUTHOS-13 conference in August 2020 in Vancouver, Canada. Division members are encouraged to join these professional activities.

I am delighted to announce that Prof. Shripad Revankar from Purdue University has been selected as this year's recipient of the Technical Achievement Award (TAA) which is the highest honor in the division. He was recognized for "his significant contributions to nuclear reactor thermal-hydraulics through experiments, and modelling of phenomena important in the analysis of nuclear reactor safety and applications". Prof. Revankar will deliver TAA Lecture on Monday, Nov. 18th during the 2019 ANS Winter Meeting. I also want to congratulate Mr. J. Pacio for being selected for this year's Best Paper Award for the paper co-authored with M. Daubner, T. Wetzel, H. Uitslag-Doolaard, A. Mathur, and F. Roelofs.

Finally, I would like to welcome newly elected THD officers for 2019-2020 term: Vice Chair, Dr. Wade Marcum; Secretary, Dr. Elia Merzari; and Treasurer, Dr. Bao-Wen Yang. I would also like to welcome new and re-elected THD Executive Committee members: Drs. John Luxat, Hisashi Ninokata, Yang Liu, Annalisa Manera, and Piyush Sabharwall, and new division Program Committee leadership: Dr. Igor Bolotnov as chair and Dr. Dillion Shaver as vice chair whose term will be three years from this June. Also, we welcome Ms. Marilyn Delgado from TAMU as new webmaster. I thank them all for their voluntary service.

On behalf of the division, I thank you all THD members for your continued involvement into and dedication toward the division and wish you a productive professional activity. I hope to see you in November at 2019 ANS Winter Meeting in Washington, DC. Thank you very much!

Chul-Hwa SONG
2019-2020 THD Chair
Thermal-Hydraulics Safety Research Division
Korea Atomic Energy Research Institute
chsong@kaeri.re.kr

Honors and Awards Committee Report

2019 THD Technical Achievement Award

The Technical Achievement Award is the highest award given by the THD. The TAA 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.

Committee members voted on each nomination in several categories. After

tallying the votes, Dr. Shripad Revankar was named the TAA winner for 2019.

THD Award Ceremony and TAA Lecture

Professor Revankar will be formally recognized on Monday afternoon after the Computational Thermal Hydraulics – II session of the American Nuclear Society Winter Meeting on November 18, 2019 held in Washington DC, USA

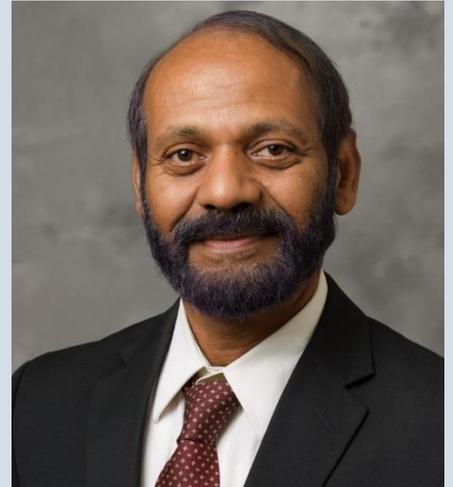
As a TAA tradition, Prof. Lee will present a TAA Lecture titled “Effects of Non-Condensable on Passive Condenser Systems” immediately following the presentation of his award.

I would like to take this opportunity to thank the 2019 THD H&A Committee members for their dedicated work! Please also join us in congratulating Prof. Revankar and enjoy the TAA lecture.

2019 Best Paper Award

Nomination was solicited from NURETH-18, which was the only full-paper topical meeting this year. A total of 8 nominees were presented, of which 7 were eligible (had at least one ANS member as an author).

Committee members voted on each nomination in several



Prof. Shripad Revankar
the 2019 Technical Achievement
Award winner.

categories. After tallying the votes, "Inter-wrapper flow: LBE experiments and simulations" by J. Pacio, M. Daubner, T. Wetzel, H. Uitslag-Doolaard, A. Mathur, and F. Roelofs was selected as the winner of the best paper award.

We, THD members, congratulate the authors of this paper on being selected as the THD-BPA recipients of the 2018-2019 Best Paper Award.

Dr. DuWayne Schubring
University of Florida
THD H&AC Chair (2019-2020)
dlschubring@ufl.edu

Technical Program Committee Report

The strong THD presence at the ANS national meetings continues after a positive 2019 ANS Annual Meeting.

A total of **91** summaries were submitted, out of which, based on the reviewer recommendations, a total of **78** 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: 258 reviews were completed for this Annual Meeting (on average, over 2.8 reviews per paper). All **17** sessions sponsored by THD are listed on the right. THD is also co-sponsoring additional sessions with other divisions.

This Spring THD is co-sponsoring a 2020 Advances in Thermal Hydraulics meeting which is organized in Paris, France this time and will be held on March 31st – April 3rd, 2020. It is an exciting opportunity to present your research in Europe. The submission window may still be open depending on the time of the publication:

<http://epsr.ans.org/meeting/?m=326>

Moreover, do not forget that the submission website is open for the 2020 ANS Annual Meeting, which

ANS Winter THD Technical Sessions

Washington, DC
Marriott Wardman Park
November 17-21, 2019

Session	# of papers	Time Slot
Experimental Thermal Hydraulics – I	5	Mon 1pm
Computational Thermal Hydraulics – I	5	Mon 1pm
General Thermal Hydraulics – I	5	Mon 3:55pm
Computational Thermal Hydraulics – II	5	Mon 3:55pm
Thermal Hydraulic Challenges for Micro-Reactors (P)		Tue 10:15am
Educational Nuclear Thermal Hydraulics Issues and Challenges (P)		Tue 10:15am
Young Professional Thermal Hydraulics Research Competition	6	Tue 1:15pm
Experimental Thermal Hydraulics – II	6	Tue 1:15pm
Multiscale and Multi-Physics Thermal Hydraulics	5	Tue 3:55pm
General Thermal Hydraulics – II	5	Tue 3:55pm
Two-Phase Flow Thermal Hydraulics	4	Wed 10:15am
Experimental Thermal Hydraulics – III	6	Wed 1:15pm
Computational Thermal Hydraulics – III	6	Wed 1:15pm
General Thermal Hydraulics – III	5	Wed 3:55pm
Experimental Thermal Hydraulics – IV	5	Wed 3:55pm
General Thermal Hydraulics – IV	5	Thu 8am
Computational Thermal Hydraulics – IV	5	Thu 10:25am

Continued on p. 5

will be held in Phoenix, AZ in June 7-11, 2020. THD is again offering a vibrant program with ten sessions (including three panels).

Do not forget to submit papers at <http://epsr.ans.org/meeting/?m=307>, the submission window has already open and it will close in January 2020.

1. Thermal Hydraulics activities for the Versatile Test Reactor (co-sponsor with RPD)
2. Thermal-Hydraulics of Nuclear Micro-reactors:
3. Progress and Challenges in Thermal Hydraulics of MSRs
4. Two-phase flow and heat transfer fundamentals
5. Computational Thermal Hydraulics
6. General Thermal hydraulics
7. Experimental Thermal Hydraulics
8. Thermal-hydraulics challenges and research opportunities in licensing advanced reactor designs [P]
9. Challenges and Opportunities in Thermal Hydraulics of High Temperature Gas Cooled Reactors [P]
10. Thermal Performance for Integrated Energy Systems: Design, Development and Deployment [P]

At the 2019 ANS Winter Meeting in Washington, DC, the THD Program Committee meeting will be held on Sunday November 17th, 2019, starting at 2:30 pm at the room "Virginia A". Anyone interested in the Program Committee activities is invited to participate.

Finally, we would like to express our gratitude to all of the colleagues who devote their 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.

On a personal note, I am excited to start my responsibilities as the PC Chair with help from the new Assistant Chair, Dillon Shaver. We appreciate the efforts of Prof. Elia Merzari who dedicated a lot of time leading the program committee in the last three years and his continued support as we learn the responsibilities which come with the THD program committee. We look forward to support the division and hope to further grow the division and continue to build on the success of the division in the future!

Igor Bolotnov
NC State University
THD PC Chair

Dillon Shaver
Argonne National Lab
THD Vice PC Chair
PCChair@thd-ans.org

ATH 20'

March 31 – April 3, 2020
Palaiseau, France

www.sfen-ath2020.org

Honorary Chair

Yassin Hassan, Texas A&M

General Chairs

Jean-Paul Chabard, EDF
Seungjin Kim, Purdue University

Technical Program Chairs

Igor Bolotnov, NCSU
Sofiane Benhamadouche, EDF

NUTHOS-13

August 23-26, 2020
Portland, OR, USA

Honorary Chairs

Guanxing Li, CNS
Hee Cheon No, KAIST
Hisashi Ninokata, POLIMI

General Chair

John Luxat, McMaster

Technical Program Chair

David Novog, McMaster

Technical Program Co-Chairs

Xiaodong Sun, UMich
Yanhua Yang, SPIC
Chul-Hwa Song, KAERI
Koji Okamoto, Univ. of Tokyo
Elia Merzari, Penn State U

Nominating Committee Report

The THD nominating committee for this year is composed of W. Dave Pointer (Chair), Chul-Hwa Song, Wade Marcum and Igor Bolotnov (ex-officio, as PC chair). The goal of this committee is to nominate members for division committees, including division officers.

For the 2020-2021 ANS year, the nominating committee will propose the following slate of candidates for the Executive Committee and Division Officers:

- Chair – Wade R. Marcum
- Vice-Chair/Chair-Elect – Elia Merzari
- Secretary – Bao-Wen Yang
- Treasurer – Annalisa Manera
- Executive Committee (5 at large)
 - Yang Liu
 - John Luxat
 - Hisashi Ninokata
 - Piyush Sabharwall
 - Caleb Brooks

The official nominations come from the Executive Committee. This matter will be discussed at the Washington DC meeting.

In June 2020, the following members' terms expire from the Executive Committee:

- Yang Liu
- John C. Luxat
- Annalisa Manera
- Hisashi Ninokata
- Robert P. Martin

On behalf of the Nominating Committee, I wish to thank all of our new officers and committee members for agreeing to serve the division in the next years along with all those rolling off committees for their past service.

W. Dave Pointer
Oak Ridge National Laboratory
THD Nominating Committee Chair (2019-2020)
pointerwd@ornl.gov

Highlight from NURETH-18



The THD-supported NURETH-18 was held on August 18-23, 2019 in Portland Oregon, USA with approximately 526 participants from 23 countries. This conference was organized by the Thermal Hydraulics Division of the American Nuclear Society (ANS) and Hosted by the Eastern Washington Section of the ANS with support from Oregon State University, Kairos Power, NuScale, Idaho National Laboratory, Oak Ridge National Laboratory, and Argonne National Laboratory. A total 832 abstracts from 28 countries were submitted with 604 papers accepted to conference final program.

Five Plenary Lectures on current nuclear power development stats and nuclear space propulsion research and development were delivered. A total of 17 Keynote Lectures cover technical topics of high priority and interest from various countries were also presented.

Two memorial panel-sessions were organized and held in remembrance of Professor Raj Sehgal and Geoff Hewitt & George Yadigaroglu, respectively.

A total of 14 technical sessions were delivered over the course of the five day conference with 12 parallel presentations throughout.

Technical awards were delivered to three reviewers, eight best-papers, three young professionals, and two newly inducted NURETH fellows – Dr. Bao-Wen Yang, and Prof. Xiaodong Sun.

Social events were held each day including a dinner and tour of the Portland water-front via riverboat as well as a private dinner and tour of the Oregon Museum of Science and Arts.

At the conclusion of the meeting were three events including a technical tour of NuScale and the Oregon State University Thermal hydraulic Test Facilities (attended by 60 people) along with two unique workshops on GOTHIC (attended by ~37 people) and Turbulence Modeling (attended by ~45 people).

Wade Marcum
NURETH-18 Assistant TPC Co-Chair



Financial Report

2018 & 2019 has been a very healthy financial year for THD thanks to generous contributions from the NURTEH-17 organizers and healthy meeting participation. Our division holds two separate accounts: one general and one scholarship/awards account (formerly referred as the endowment account). Spending from the general account is unrestricted up to the total value of the account, as long as the transactions are approved by the division executive committee.

Spending from the awards account is restricted to ensure the long term availability of the fund to support the THD awards. The general fund is supported by membership dues (referred as the Dues Revenue Allocation) and income from conferences hosted by the division (referred as the Meeting Revenue). The scholarship/awards account has primarily been funded by generous donations from the organizers of conferences supported by the division (referred as the Contribution Revenue). Recently that has changed as contributions from overseas conferences have been allowed to the general fund.

The balance of the restricted fund account as of June 2018 is \$55,733. The balance for the unrestricted account is \$97,280 as of September 30th 2018, not reflective of award and plaque orders made in October 2018. We note the very generous contribution of the NURETH-17 organizers who donated 31,180\$ to the general account. Notable is also the contribution received from ICAPP'18 for \$5,425, the first time the division receives income from the ICAPP series. Additional income from ATH'18 is also expected. The spend limit for 2018 is \$4,750, but little has been spent to date due to issues with student support at the annual meeting.

	2018 Actual	2019 Budget	2019 Actual through 11/6/2019
Balance Forward from Previous Year	\$ 59,018	\$ 51,459	\$ 51,459
Budget Funds			
Member Dues Allocation (\$2/full-member; \$1 reduced-member)	\$ 2,298	\$ 2,300	\$ 995
Division Income	\$ 43,355	\$ 39,173	
Total Income	\$ 45,653	\$ 41,473	\$ 995
	2018 Actual	2019 Budget	2019 Actual through 11/6/2019
Budget Expenses			
Newsletters, Website			
Awards & Plaques	\$ 1,710	\$ 1,250	\$ 351
National Meeting Costs			
Topical Meeting Costs			
Division Officer Expenses			
Student Support	\$ 3,000	\$ 3,500	\$ 3,000
Future Activity			
Scholarship/NEED Funding	\$ 48,500	\$ 500	\$ 500
YMG Support			\$ 500
Other Expenses	\$ 2		
Total Expenses	\$ 53,212	\$ 5,250	\$ 4,351
Net	\$ (7,559)	\$ 36,223	\$ (3,356)
Total Year End Funds	\$ 51,459	\$ 87,682	\$ 48,103

As a consequence the entirety of the student support will be dedicated to the winter meeting.

We note the substantial health of the finances of the division, which has led to the desire of investing funds toward the creation of scholarships. A proposal to this end has been prepared and discussed with the Scholarship committee and it will be discussed on at the next THD executive committee.

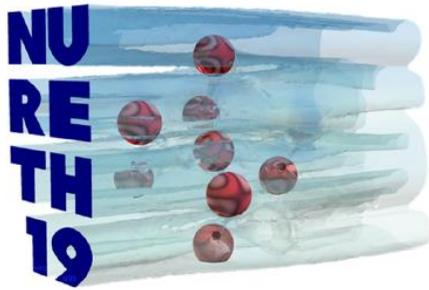
Bao-Wen Yang
THD Treasurer (2019-2020)

November 2019
ANS Thermal Hydraulics
Division Newsletter
(Issue No. 31)

Wade Marcum, Editor
THD Vice Chair (2019-2020)
<http://thd.ans.org>



American Nuclear Society
Thermal Hydraulics Division



www.nureth19.com

LEAD THE FLOW

19th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-19)

August 29 - September 3, 2021 • Brussels, Belgium • The Square



SPECIAL EVENTS

-  CONFERENCE DINNER
-  TECHNICAL TOURS
-  AWARD CEREMONY
-  POSTER COMPETITION
-  MOVIE COMPETITION
-  YOUNG GENERATION EVENT
-  ATOMIC JOGGING

ABSTRACT DEADLINE: NOVEMBER 8, 2020

- | | | |
|----------|---|---|
| NOVEMBER |  | SUBMISSION OF ABSTRACTS: November 8, 2020 |
| DECEMBER |  | ABSTRACT ACCEPTANCE: December 18, 2020 |
| FEBRUARY |  | DRAFT PAPER SUBMISSION: February 28, 2021 |
| APRIL |  | PAPER REVIEW NOTIFICATION: April 30, 2021 |
| MAY |  | FINAL PAPER SUBMISSION: May 28, 2021 |