



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'd like to get involved.

Officers

Chair

Wade R. Marcum
Wade.Marcum@oregonstate.edu

Vice Chair/Chair-Elect

Elia Merzari
ebm5351@psu.edu

Secretary

Bao-Wen Yang
bwy01@deltaenergygroup.com

Treasurer

Annalisa Manera
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Immediate Past Chair

Chul-Hwa Song
chsong@kaeri.re.kr

Executive Committee

Terms Expiring June 2021

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

Terms Expiring June 2022

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

Terms Expiring June 2023

Yang Liu
John Luxat
Hiashi Ninokata
Piyush Sabharwal
Caleb Brooks

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Technical Program Chair

Igor Bolotnov

Honors & Awards Chair

Seungjin Kim

Webmaster

Marilyn Delgado

YMG Liaison

Matthew D. Zimmer

A Message from the Chair

Dear Friends and Colleagues,

I author this letter during an unprecedented time. The world will never function again in the same manner it has prior to the year 2020. The COVID-19 pandemic has created volatility and uncertainty within our homes and throughout society. We all have family, friends, and colleagues that have been affected and impacted by these trying conditions. Yet, through our current circumstance there exist numerous positive and uplifting examples of how our community has come together to support one another. While not trivializing the hardships that we are experiencing, it is these demonstrable forms of support and community that I choose to focus on here.

The American Nuclear Society hosted its first ever entirely virtual Annual ANS National Meeting in June. In spite of our inability to travel, the participation at this meeting far surpassed recent, past meeting. The Thermal Hydraulics Division (THD) Program Committee and Executive Committee meetings held via Zoom on June 7, 2020 also had greater attendance and participation than recent past meetings. Our community remains strong and engaged. Again, on November 16-19, 2020 the American Nuclear Society will holds its winter meeting virtually. The organization and logistics of moving a traditionally hosted conference to be delivered synchronously across the world are non-trivial; our Society has been phenomenal in creating systems and structures that facilitate engaging dialogues and presentations via remote delivery means. Our Division's [website](#) has continued to grow, evolve and update to more effectively communicate with its members due to the efforts of the THD webmaster – Marilyn Delgado. We plan to post all materials relevant to the [Program Committee and Executive Committee Meetings](#) to this site for ease of access to all members.

The Thermal Hydraulics Division has a fantastic technical program planned during



the 2020 ANS Winter Meeting, including a total of 22 unique technical paper sessions comprising 94 summaries. Additionally, there are three panel sessions which will deliver a riveting dialogue around relevant THD topics. I encourage you all to engage and participate as you're able during this [2020 ANS Winter Meeting](#).

Numerous significant accomplishments have been made this year within the Thermal Hydraulics Division. A complete review and update to the THD's bylaws were conducted through the proactive efforts of Bob Martin, Elia Merzari, and Xiaodong Sun. The Division established the service award to recognize significant and sustained contributions toward the division.

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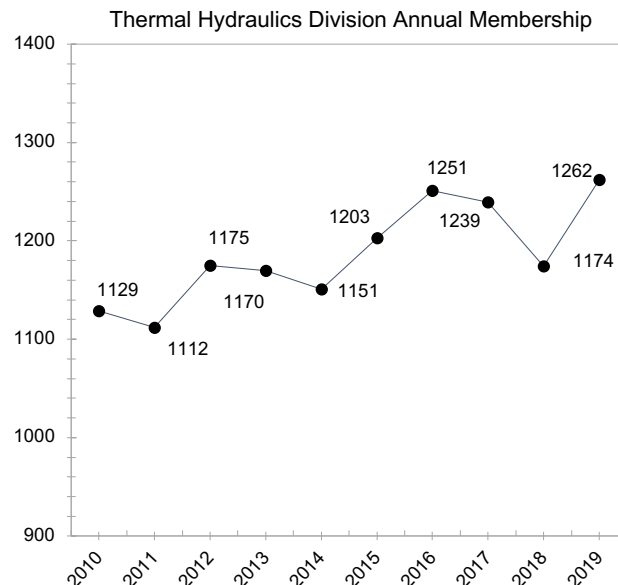
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Membership Committee Report

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

The data from early 2020 indicate a total of 1262 members, recording the highest division membership for Thermal Hydraulics in history. This exciting feat is due to the contributions of all ANS THD members and should be viewed as a positive metric for success. 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.

Chul-Hwa Song
Membership Committee Chair
THD Membership Committee Chair (2020-2021)
chsong@kaeri.re.kr



Message from the Chair, cont.

Additionally, with a generous donation from the Sehgal family, the Division established the Sehgal Memorial Award (named after Dr. Bal Raj Sehgal), to be distributed at each International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH). These awards are in addition to the recently established Lawrence E. Hochreiter Graduate Scholarship that was awarded for the first time earlier this year.

The Honors and Awards Committee announced the 2020 Thermal Hydraulics Technical Achievement Award. Dr. Michael Z. Podowski was selected for his ground-breaking technical accomplishments in the modeling and computer simulation of single and multiphase flow and heat transfer. Dr. Podowski will be recognized at the conclusion of the General Thermal Hydraulics Session on Monday evening of the ANS Winter Conference. His acceptance presentation will be postponed and delivered at the next NURETH conference. Congratulations, Dr. Podowski, on the much deserved recognition for all that you've accomplished.

The flexibility and creativity of our topical meeting organizers should be recognized. NUTHOS-13 – originally planned to be hosted in Vancouver BC in August of 2020 – has been postponed to 2022. Additionally, NURETH-19, originally planned to be held in Brussels in August 2021, its now planned to take place in March of 2022. Adjustments to these significant logistical efforts are nontrivial; I extend my appreciation on behalf of the THD community to the topical meeting organizers for their perseverance.

On behalf of the executive committee members, I thank you all for your continued involvement and dedication toward the Division and wish you a productive professional activity. I hope to see you all at the ANS Meeting interactions through the Division and Technical Tracks during 2020 ANS Winter Meeting, held virtually.

Wade R. Marcum
ANS 2020-2021 THD Chair
wade.marcum@oregonstate.edu

Technical Program Committee Report

The strong THD presence at the ANS national meetings continues after a first ever Virtual 2020 ANS Annual Meeting.

As the world deals with global pandemic the Winter meeting will be held in Virtual format as well. Despite that, THD have a very impressive program planned for the November event.

A total of **100** summaries were submitted, out of which, based on the reviewer recommendations, a total of **94** 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 efforts: 240 reviews were completed for this Annual Meeting (on average, about 2.4 reviews per paper). All **25** sessions sponsored by THD are listed on the right. One of those sessions (on TCR) is co-sponsored with RPD. In addition, there are 4 VCR/TCR related sessions which are sponsored by RPD and co-sponsored by THD. The links to connect to each session will appear 30 minutes before the session start for registered conference participants.

We expect the submission website for the 2021 ANS Annual Meeting to be open mid-January, which is currently planned to be held in Providence, RI in June 13-17, 2021. THD is again offering a vibrant program with 11 sessions (including two panels):

2020 ANS Winter THD Technical Sessions

November 15-19, 2020

Session	# of papers	Time Slot (ET)
Computational Thermal Hydraulics – I	5	Monday 1pm
Nuclear Power and the Transformational Challenge of Autonomous Operation: AI/ML as an Enabler	Panel	Monday 1pm
Thermal Performance for Integrated Energy Systems: Design, Development and Deployment	Panel	Monday 3:40pm
Experimental Thermal Hydraulics – I	5	Monday 3:40pm
Computational Thermal Hydraulics – II	5	Tuesday Noon
Advancements in SAM Development and Analysis	5	Tuesday Noon
Two-phase Flow and Heat Transfer Fundamentals-I	4	Tuesday 2:40pm
General Thermal Hydraulics-I	4	Tuesday 2:40pm
Education in Thermal Hydraulics	Panel	Tuesday 2:40pm
Experimental Thermal Hydraulics-II	5	Tuesday 4:50pm
Thermofluidics for Transformational Challenge Reactor (co-sponsored with RPD)	6	Tuesday 4:50pm
Multiphysics Simulation	5	Wednesday Noon
Computational Thermal Hydraulics – III	5	Wednesday Noon
Young Professional Thermal Hydraulic Research Competition-I	4	Wednesday 2:40pm
Molten Salt Thermal Hydraulics-I	4	Wednesday 2:40pm
Severe Accident Modeling	3	Wednesday 2:40pm
Molten Salt Thermal Hydraulics-II	4	Wednesday 4:50pm
Computational Thermal Hydraulics-IV	4	Wednesday 4:50pm
Young Professional Thermal Hydraulic Research Competition-II	4	Wednesday 4:50pm
Computational Thermal Hydraulics-V	4	Thursday 10am
Two-phase Flow and Heat Transfer Fundamentals-II	3	Thursday 10am
Computational Thermal Hydraulics-VI	3	Thursday 12:15pm
General Thermal Hydraulics-II	4	Thursday 12:15pm
Computational Thermal Hydraulics-VII	3	Thursday 2:30pm
Experimental Thermal Hydraulics-III	5	Thursday 2:30pm

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1. Two-phase flow and heat transfer fundamentals
2. Computational Thermal Hydraulics
3. General Thermal hydraulics
4. Experimental Thermal Hydraulics
5. Thermal Hydraulics Research and Development in the Versatile Test Reactor (co-sponsor with RPD)
6. Challenges and Opportunities in Thermal Hydraulics of Load-Following Nuclear Systems [P]
7. Thermal-hydraulics research in ARPA-E programs [P]
8. Machine Learning for nuclear thermal-hydraulics
9. Thermal-hydraulics for advanced reactors
10. Thermal-hydraulics research in TCR
11. Thermal Hydraulic R&D Activities in Printed-Circuit Steam Generators for Advanced Nuclear Reactors

At the 2020 ANS Virtual Winter Meeting, the THD Program Committee meeting will be held on Sunday November 15th, 2020, starting at 3:00 pm (<https://oregonstate.zoom.us/j/91067127660?pwd=cVpQTnluUW9BMHBJZ1hIRE5UbKRndz09>). 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 paper summaries, volunteering to organize

sessions, and supporting the peer-review of the papers.

Igor A. Bolotnov
NC State University
THD PC Chair

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

NUTHOS-13 ATH'20

Cancelled

Proceedings of ATH'20
will be issued
electronically.

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

March 6-11 2022 • Brussels, Belgium

Due to the persistence of travel restrictions related to COVID-19 and the current negative outlook, we have decided to postpone the NURETH-19 conference to March 6-11, 2022. See call for papers attached to this newsletter.

As a result the submission of abstracts has been postponed to February 14, 2021. We continue to look forward to hosting you in Brussels very soon.

Lead the Flow. SCK CEN and the von Karman Institute, in collaboration with NRG and ANS, are hosting the 19th International Topical Meeting on Nuclear Reactor Thermal Hydraulics in Brussels, Belgium. Brussels is more than the capital of Belgium: it is the vibrant heart of Europe. In Brussels cultures swirl together in a creative mix of art de vivre, know-how, heritage and surrealism.

The Technical Program Committee is developing an attractive program and has received confirmation on fifteen high-level keynotes. You are invited to submit your abstract to one of the seven technical tracks or twenty-four special topics highlighted on the website www.nureth19.com. Students and young professionals are challenged to present their innovative research in the best poster contest. All participants can send in their most stunning CFD simulation or experiment recording for the movie competition. The meeting will start with pre-conference workshops on Sunday morning and will officially kick-off on Sunday evening with a Welcome reception. The Technical program will run from Monday to Thursday. On Friday technical tours to research facilities and high-tech industrial plants are planned.

Can you already feel the positive energy? We do and we are ready to welcome you!

Nominating Committee Report

The THD nominating committee (NC) for this year is composed of Chul-Hwa Song (Chair), Wade Marcum, Elia Merzari, and Igor Bolotnov (without Vote). The goal of this committee is to nominate members for Division committees, including Division officers.

For the 2021–2022 ANS year, the NC will propose the candidates for the following positions of Division Officers and Executive Committee members: Division Vice-Chair/Chair-Elect, Secretary and Treasurer as Division Officers, and 5 at-large EC members to replace existing EC members whose term is to be expired in June 2021. The official nominations come from the EC and this matter will be discussed at the 2020 Winter meeting.

Per the recently approved Division Bylaws changes that became effective this July, the Honors and Awards Committee (H&AC) shall consist of four (4) past chairs of the Division serving 4-year terms starting at the end of their term, and three (3) general members, who will serve a 3-year term, will also be nominated for the discussion at the 2020 Fall meeting. New chair will be nominated, among general members to be elected, to fill the seat opened by Seungjin Kim whose term expires in June 2021. And Kurshad Muftuoglu, who is to be on the fourth year of service to the H&AC as past Division chair, shall serve as vice-chair for a 1-year term.

Per the recently approved Division Bylaws changes, the Conference Screening Committee (CSC) shall consist of nine (9) members, including the chair, who shall serve a 4-year term and each year at least two (2) members should be newly added. Since all the CSC memberships have been recently expired at the same time after the ANS 2020 Annual meeting, the NC will nominate the CSC Chair to serve a 4-year term and propose the nominees of the CSC members consisting of four (4) sets of two (2) members, whose terms will start immediately after the EC meeting this November, but are to be expired in June 2025, 2024, 2023 and 2022 each, respectively.

Per the recently approved Division Bylaws changes, the Scholarship Committee (SC) shall consist of five (5) to nine (9) members who shall serve a 3-year term, including the Division chair, and each year at least two (2) members should be newly added. Since all the SC memberships need to be newly appointed at the ANS 2020 Winter meeting at the same time, the NC will propose the nominees of the SC members consisting of three (3) sets of members, whose terms will start immediately after the

Honors and Awards Committee Report

The 2020 Thermal Hydraulics Division Technical Achievement Award (TAA) is awarded to Dr. Michael Z. Podowski, (see photo) Professor of Nuclear Engineering at Rensselaer Polytechnic Institute (RPI). He is recognized for his significant contributions toward nuclear reactor



thermal-hydraulics, including: BWR stability analysis, Multiphase Computational Fluid Dynamics (MCFD), the mechanistic modeling of boiling heat transfer and severe accidents, among many other research areas. The citation on his award plaque reads, "For his ground-breaking technical accomplishments in the modeling and computer simulation of single and multiphase flow and heat transfer." The TAA award ceremony will be held at the ANS Winter meeting after the session "Experimental thermal-hydraulics -I" to be held on November 16th 2020. Professor Podowski will be delivering a lecture concerning his TAA award at NURETH-19.

Prof. Seungjin Kim
Purdue University
THD H&A Committee Chair (2020-2021)
seungjin@purdue.edu

EC meeting this November, but are to be expired in June 2024, 2023 and 2022 each, respectively.

The division NC would like to encourage members interested in becoming more involved to contact one of the leadership positions listed above. In particular, the Division is usually in need of volunteers for technical meeting session organizers and paper reviewers.

On behalf of the NC committee, I wish to thank all of our new Division 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.

Dr. Chul-Hwa Song
KAERI
Nominating committee Chair (2020-2021)
chsong@kaeri.re.kr

Two new awards established

At the executive committee meeting of the Thermal-hydraulics division held in June 2020, the committee approved the establishment of two awards: (i) the Bal-Raj Sehgal Memorial Award and (ii) the meritorious service awards.

Both awards have then been approved by the American Nuclear Society National Honors and Award Committee, the Finance Committee and the Board of Directors. **We are now accepting nominations for 2021!** Following is a brief description of both awards. *For more information see: <https://www.ans.org/honors/>*

The *Bal-Raj Sehgal Memorial Award* recognizes an early-career to a mid-career individual for his/her exceptional and/or sustained contributions to the thermal-hydraulics field with a particular focus on the application of thermal-hydraulics to nuclear reactor safety. The award consists of an engraved plaque and a monetary award of \$2,000. It is awarded every 2 years and presented at the nearest NURETH conference to arrive. **The next deadline for nominations is August 1st, 2021.** The recipient is expected to deliver a keynote lecture at the NURETH conference at which the award is presented in coordination with the conference organizers.

A highly visible and respected world leader in thermal hydraulics and nuclear safety research, Professor Sehgal was a fixture at the NURETH conferences with which he had a special affinity, regularly invited to deliver a keynote or plenary lectures. While he would engage in serious technical discussions with his peers and colleagues, he would often be seen interacting with the younger generations to transfer his considerable knowledge and experience. He was active in TH Division affairs, serving as TH Division Chair and receiving the Thermal Hydraulics Technical Achievement Award.

Dr. Sehgal was an outstanding scientist and researcher, a great teacher and mentor, a prolific author (360 articles), and a tireless servant to the community. During the course of his career, he was inducted into numerous societies and academies, notably as elected member of the Swedish Royal Academy of Engineering Sciences, the U.S. National Academy of Engineering, and the Lithuanian Academy of Sciences and fellow of the American Nuclear Society and the American Society of Mechanical Engineers. For his wide-ranging and impactful contribution to research and science of nuclear safety, he was recognized with numerous awards, including the Seaborg Medal, the Technical Achievement

Webmaster Report

The THD website is undergoing a lot more foot traffic than before given the increase in online connections and virtual meetings. This is being taken into account for the website in order to make it easy to navigate. There have been some minor changes with the color schemes and inclusion of new modules specific to the virtual meetings. Also, there is a new page for past virtual conferences. Hopefully with these new additions, the investment of the members of the THD committee to the society is evident and attracts new members to visualize their future with the committee. We will see you online soon!

Ms. Marilyn Delgado
Texas A&M University
THD Webmaster
mdelgad17@tamu.edu

Award, and the Thomson Award for Reactor Safety from the American Nuclear Society. This award, established in collaboration with his family, honors his legacy.

The *Thermal Hydraulic Meritorious Service Award* recognizes an individual for sustained and exemplary service to the nuclear thermal-hydraulic profession. Service can be in the form of: (1) Leadership in the thermal-hydraulic division (THD) of ANS. (2) Leadership in national and international research and engineering programs related to thermal-hydraulics. (3) Individual non-technical contributions that lead to the betterment and growth of the profession as a whole. (4) Educational contributions aimed at the next generation of thermal-hydraulic engineers. (5) Advocacy for thermal-hydraulic research and development.

Emphasis is placed on sustained, well-recognized, service contributions over a number of years but single exceptional one-time contributions may also be considered. The award consists of an engraved plaque and a monetary award of \$1,000. It is presented at the ANS Annual Meeting. **The next deadline for nominations is March 1st, 2021.**

Please consider nominating yourself or a colleague for these awards.

Elia Merzari
Pennsylvania State University
THD Vice-Chair (2020-2021)
ebm5351@psu.edu

Financial Report

The budget for 2021 was approved at the June meeting (Table 1):

- 2500\$ are allocated for student support (\$2000 for ANS meetings and \$500 to fund a best paper award at the 2021 student conference).
- The budget for awards and plaques is increased to \$1250.
- There were two major movements in the general account: an income of \$25,054 (thanks to the generous contribution from NURETH-18) and a major disbursement of \$29,192 to the award funds (\$21,000 to fund the service award, and \$8,192 to support the increase of TAA fund). The general account has new balance of \$41,748 (see Table 1).

Table1: ANS THD Budget

	2019	2020	2020	2021	2021
	Actual	Budget	Actual through 6/30/2020	Proposed	Approved
Balance Forward from Previous Year	\$51,459	\$72,984	\$72,984	\$43,698	\$43,698
Budget Funds					
Member Dues Allocation (\$2/ full dues member; \$1 / reduced dues member)	\$1,325	\$2,300	\$817	\$2,300	\$2,300
Student Support (ANS Change Plan)				3000*	\$0
Division Income	\$25,054				
Total Income	\$26,379	\$2,300	\$817	\$5,300	\$2,300
Budget Expenses					
Newsletters, Website					
Awards & Plaques	\$851	\$1,250	\$661	\$645	\$1,250
National Meeting Costs					
Topical Meeting Costs					
Division Officer Expenses					
Student Support	\$3,000	\$2,500	\$500	\$2,500	\$2,500
Future Activity					
Scholarship/NEED Funding	\$1,000	\$500	\$29,692	\$500	\$500
YMG Support					
Other Expenses	\$3				
Total Expenses	\$4,854	\$4,250	\$30,853	\$3,645	\$4,250
Net	\$21,525	(\$1,950)	(\$30,036)	\$1,655	(\$1,950)
Total Year End Funds	\$72,984	\$71,034	\$42,948	\$45,353	\$41,748

* These funds will not be available in 2021 due to delays in the ANS plans.

November 2020
ANS Thermal Hydraulics
Division Newsletter
(Issue No. 33)

Elia Merzari, Editor
THD Vice Chair (2020-2021)
<http://thd.ans.org>

Table2: ANS THD Awards Funds

	Hochreiter	TAA	Services
Balance Forward from 12/31/2018 Year	\$ 63,000	\$ 35,881	\$ -
Budget Funds			Starting 2020
Investment Gain (up to 12/31/2019)	\$ 12,739	\$ 7,255	\$ -
Division Designated (2020)		\$ 8,192	\$ 21,000
Total Income	\$ 12,739	\$ 15,447	\$ 21,000
Budget Expenses			
Awards	\$ -	\$ 1,000	\$ -
Plaques	\$ -	\$ 73	\$ -
Other Expenses	\$ -	\$ -	\$ -
Total Expenses	\$ -	\$ 1,073	\$ -
Net	\$ 12,739	\$ 14,374	\$ 21,000
Total Year End Funds	\$ 75,739	\$ 50,255	\$ 21,000
Spending Limit (4.92)	\$ 3,726	\$ 2,473	\$ 1,033

As shown in Table 2 for all three award funds:

- The TAA award account started at a fund level of \$35,881, with incomes from investment gain (\$7,255, a 20.22% annual gain) and division designated fund transfer (\$8,192 transferred from the general account), after deducting \$1,000 for TAA award and \$72.5 for the plaque, the expected budget balance will be **\$50,255** (not account for the investment gain/loss in 2020). This new balance will raise the spending limit to \$2,472.55 (4.92%) sufficient to support the increase of TAA award from \$1,000 to \$2,000.
- With the investment gain of \$12,739 (20.22% gain), the Lawrence Hochreiter scholarship account reaches a new balance of \$75,739, not including the investment gain/loss in 2020.
- The newly established Service Award fund was set up with a disbursement of \$21,000 from the General account, which will allow a pending limit of \$1,033 (4.92%)

Annalisa Manera
THD Treasurer (2020-2021)



American Nuclear Society
Thermal Hydraulics Division



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

March 6 - 11, 2022 • Brussels, Belgium • The Square

CALL FOR PAPERS - NEW DATES (v.10)

EXECUTIVE CHAIRS

General Chairs

Hamid Aït Abderrahim, SCK CEN
Jean-Paul Chabard, EDF
Xiaodong Sun, University of Michigan

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Yassin Hassan, Texas A&M
Hisashi Ninokata, Politecnico di Milano
Michel Giot, UCLouvain

Technical Program Committee Chair

Elia Merzari, Penn State University

Technical Program Committee Co-chairs

W. David Pointer, ORNL
Chul-Hwa Song, KAERI
Ferry Roelofs, NRG

Steering Committee Chair

Steve Bajorek, US NRC

ABSTRACT DEADLINE: FEBRUARY 14, 2021

FEBRUARY		SUBMISSION OF ABSTRACTS: February 14, 2021
APRIL		ABSTRACT ACCEPTANCE: April 30, 2021
JUNE		DRAFT PAPER SUBMISSION: June 30, 2021
AUGUST		PAPER REVIEW NOTIFICATION: August 31, 2021
SEPTEMBER		FINAL PAPER SUBMISSION: September 30, 2021

GUIDELINES

The limit for abstract submissions is 250 words. The limit for full-paper submissions is 16 pages. The conference proceedings will be distributed on a flash drive. Selected papers will be published in the Special issues of Nuclear Technology, Nuclear Science and Engineering, and Nuclear Engineering and Design.

ABOUT THE MEETING

NURETH is one of the premier gatherings for experts in nuclear reactor thermal hydraulics and related topical areas. The meeting is held every two years. SCK CEN, the Von Karman Institute and NRG are pleased to host NURETH-19 in Brussels, Belgium. Brussels is more than the capital of Belgium: it is the vibrant heart of Europe. In Brussels cultures swirl together in a creative mix of art de vivre, know-how, heritage and surrealism. It has everything to make your stay unforgettable!

SUBMIT AN ABSTRACT

www.nureth19.com



NURETH-19 HOSTS

Katrien van Tichelen, SCK CEN
Philippe Planquart, VKI
Ferry Roelofs, NRG



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

March 6 - 11, 2022 • Brussels, Belgium • The Square

TECHNICAL TRACKS

HIGH-QUALITY PAPERS (16 PAGE MAXIMUM) ARE SOLICITED IN THE FOLLOWING AREAS

1. FUNDAMENTAL THERMAL HYDRAULICS

- 1a Fundamental Thermal Hydraulics
- 1b Two-phase Flow and Heat Transfer
- 1c Boiling and Condensation
- 1d Interfacial Area Transport
- 1e Natural Circulation
- 1f Reactor Core & Sub-channel Thermal Hydraulics
- 1g Experimental Methods and Instrumentation
- 1h Turbulent Heat and Mass Transfer

2. COMPUTATIONAL THERMAL HYDRAULICS

- 2a Thermal Hydraulics System Code Analysis
- 2b Computational Fluid Dynamics
- 2c Computational Multi-Fluid Dynamics
- 2d Multi-scale Analysis
- 2e Multi-physics Analysis
- 2f Multi-species Analysis

3. VERIFICATION, VALIDATION AND UNCERTAINTY QUANTIFICATION

- 3a Verification & Validation
- 3b Experiments and Databases for Validation
- 3c V&V for CFD
- 3d V&V for Thermal Hydraulics Codes
- 3e Best Practice Guidelines

4. WATER-COOLED REACTORS OPERATION AND SAFETY

- 4a LWR Operation and safety
- 4b HWR Operation and safety
- 4c Transient and Accident Analysis
- 4d Scaling Issues
- 4e BEPU Analysis and Challenges in Licensing
- 4f Instabilities and Nonlinear Dynamics
- 4g Next Generation LWRs

5. SEVERE ACCIDENTS

- 5a Severe Accidents
- 5b Design Features for Severe Accident Mitigation
- 5c Natural Convection
- 5d Debris Bed Cooling
- 5e Fuel-Coolant Interaction
- 5f Hydrogen Management
- 5g Fission Product Behavior
- 5h Containment Thermal Hydraulics

6. LIQUID METAL THERMAL HYDRAULICS

- 6a Turbulent Heat Transport Modelling
- 6b Fuel Assembly and Core Thermal Hydraulics
- 6c Pool Thermal Hydraulics
- 6d Chemistry Control
- 6e Sloshing and gas entrainment
- 6f Solidification
- 6g System Thermal Hydraulics
- 6h Severe Accidents and Containment

7. ADVANCED REACTORS

- 7a Advanced Reactors General
- 7b Small Modular Reactors
- 7c High-Temperature Gas-Cooled Reactors
- 7d Salt-Cooled High-Temperature Reactors
- 7e Molten Salt Fueled Reactors
- 7f Supercritical Water Reactors

8. SPECIAL TOPICS

- 8a Versatile Test Reactor
- 8b Transformational Challenge Reactor
- 8c UQ Methods for CFD
- 8d DNS for Model Development
- 8e Reduced Order Methods
- 8f CONUSAF/FONESYS
- 8g Sub-channel Code Analysis
- 8h Fluid Structure Interaction
- 8i Accident Tolerant Fuel
- 8j Machine Learning in Thermal Hydraulics
- 8k GEMINI-collaboration
- 8l All-regime Two-Phase Flow Modelling
- 8m Post-Fukushima Daiichi Accident Forensic
- 8n Nuclear Thermal Hydraulics Program UK BEIS
- 8o High Performance Computing
- 8p Advanced Instrumentation for TH Experiments
- 8q Thermal Hydraulics for Fusion
- 8r Microreactor Thermal Hydraulics
- 8s IAEA CRP on Benchmark Analysis of FFTF Loss of Flow Without Scram Test
- 8t Reflood Thermal Hydraulics Benchmark: Experimental Effort and Code Validation
- 8u Reliability of Passive Systems
- 8v IPRESCA project

POSTER COMPETITION

Join the new 2-minute poster pitch competition. For each poster a full paper should be submitted in the system. All posters will be presented during the conference. The winning posters presenters will receive special attention. Deadline: 30 Nov '21

MOVIE COMPETITION

Prepare a one-minute movie of your experiment, simulation, or other related topic. All accepted movies will be shown during the conference and winning movies will be shown at a special event.

Movies submission deadline: 30 November 2021.

