



THERMAL HYDRAULICS DIVISION NEWSLETTER

Spring 2013

Message from the Chair

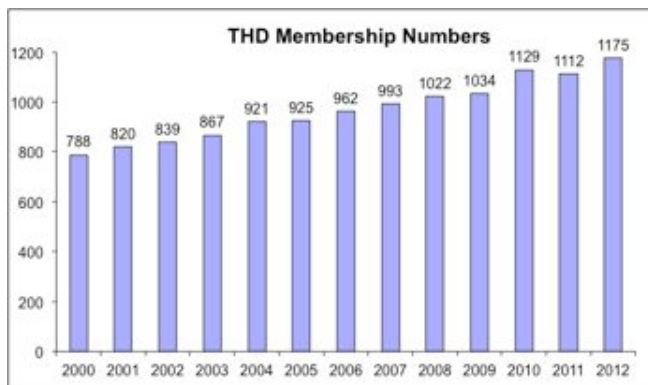


Dear Colleagues,

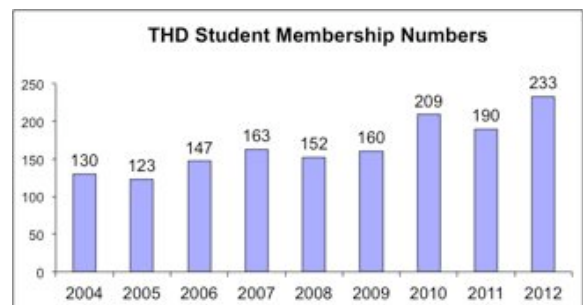
On behalf of the Thermal Hydraulics Division Executive Committee, I am pleased to report that thanks to your contributions, our division had another successful year! Our division membership continues to grow. Our member's participation in technical meetings and society

activities remains very strong. I am enormously grateful to all the members for your continued support to the Division.

First, our Division membership has remained strong, as indicated in the THD Membership Numbers plot below. As of the end of 2012, the Thermal Hydraulics Division had a total of 1,175 paid members, up by 63 members compared to the Division's 2011 membership number, representing 10.5% of the total ANS membership. It is also very exciting to note that as of the end of April 2013, our Division's paid membership number stands at 1,026, which compares very well with the number of paid members at the end of August 2012, which stood at 1,003. At the end of April 2013, the Division's total membership is 1,246, including 220 unpaid members. Our membership is distributed among a variety of sectors: consulting companies, national labs, manufacturers, government agencies, architect/construction companies, utilities, and educational institutions (staff and students), with the student members being the largest contributor at 22%.



Since student members are the future of our Division, I would like to share the trend of our Division's student membership. As shown in the plot below, our student membership had a large increase in 2010 and then another jump in 2012. As of the end of April 2013, our Division's paid student membership is 195, up by 32 compared to the number of April 2012. As I mentioned in the Fall 2012 Newsletter, the Division considers recruiting and retaining younger members, including student members, critical to the Division's growth and future success. Our Division has continued its efforts to recruit younger members and provide support for their professional development. In addition to the donations to ANS National for student travel support to national meetings and donations to the Student Conferences, the Division has offered financial travel support for our student members who present papers in the Division sponsored sessions at the ANS national meetings and topicals. For example, out of the Division's \$5,550 2013 budget approved by the THD Executive Committee, \$3,250 will be directly used for student support with another \$500 for the ANS NEED Scholarship (See "Treasurer's Report" in this Newsletter). In addition to providing student travel support, the Division has continued its effort to organize the "Young Professional Thermal-Hydraulics Research Competition" (YPTHRC) for many years. Young members are encouraged to submit summaries to this session at the 2013 ANS Winter Meeting. The deadline for submission to this winter meeting has been extended to June 24, 2013. I am grateful to the many volunteers who have helped promote our young membership.



Second, our membership participation in technical meetings and society activities continues to be very active and strong. The Division fully commits to bringing about high-quality technical meetings and sessions. At the 2012 ANS Winter Meeting and the embedded topical ATH'12 in San Diego, we had six summary sessions and six full-length papers sessions,

respectively. I am also very pleased to report that we had a very successful NURETH-15 (The 15th International Topical Meeting on Nuclear Reactor Thermal Hydraulics) meeting during May 2013 in Pisa, Italy. A total of about 460 papers were presented and about 500 people attended the meeting, including 432 registered participants (See “NURETH-15 Report” in this Newsletter). For the upcoming 2013 ANS Annual Meeting in Atlanta, GA, a total of seven sessions are planned and 41 summaries are lined for presentation (See “Program Committee Report” in this Newsletter). Also, the 2012 Technical Achievement Award (TAA) recipient, Prof. Hisashi Ninokata will deliver his TAA lecture entitled “Nuclear Fuel Assembly Thermal Hydraulics Analysis—Past, Present, and Future” at 4:30 pm Tuesday in Room Baker. Furthermore, the 10th International Topical Meeting on Nuclear Thermal-Hydraulics, Operation and Safety (NUTHOS-10) will be held December 14-18, 2014 in Okinawa, Japan (See “NUTHOS-10 Announcement” in this Newsletter). NURETH-16 will be hosted in Chicago, IL from August 30 to September 4, 2015 by the ANS Chicago Local Section. Please mark your calendar for these important meetings. It is clear that we could not have these high-quality sessions without the contributions from the authors, selfless support from the reviewers and session organizers and chairs, and the meeting organizers. I am again thankful to these volunteers for making the Division strong!



As I reported in the Fall 2012 Newsletter, the Thermal Hydraulics Division was selected to receive the 2012 Young Members Advancement Award. I had the honor and privilege, on behalf of the Division, to accept this award at the Opening Plenary at the 2012 Winter Meeting. A photo of the plaque is included here. I would like to take this opportunity to thank all of

those who have continuously supported our young professionals.

I would like to note that the organizers of NURETH-14 have generously donated \$10,000 to the THD. We truly appreciate their wonderful support to the Division. Thank you, Prof. John Luxat, Dr. Jovica Riznic, Dr. Benjamin Rouben, and many others!

I encourage you to review the Program for the 2013 ANS Annual Meeting and join us in Atlanta. I would also like to invite you to attend THD Executive Committee meeting to be

held at 4:30 to 6:00 pm in the “Greenbriar” conference room at Hyatt Regency Atlanta.

There will be some changes in the Division’s leadership after this Annual Meeting, as expected. Dr. Dave Aumiller will be our new division chair; Dr. Si Young Lee Vice chair/Chair-elect; Prof. DuWayne Schubring Secretary, and Prof. Seungjin Kim Treasurer. We also welcome the five new Executive Committee members: Prof. Igor Bolotnov, Mr. Lane Carasik, Dr. Elia Merzari, Dr. Michio Murase, and Dr. Donald Todd. In addition, at the close of this Annual Meeting, Dr. Steven Arndt and past chair Brian Woods will “retire” from the Executive Committee while I am sure they will continue to be actively involved in and support the THD activities. I personally appreciate Steven’s and Brian’s great contributions to our Division.

As my term as the division chair comes to an end, I would like to thank all of you for your continued help and support to make the Division strong. Our new officers will lead the Division for another productive year. They cannot do this without your support. The Division’s growth needs every member’s participation. Please give all your support to our new leadership so that our Division will become even stronger! Any member who would like to volunteer their time and efforts is encouraged to contact the officers.

Thank you for your continued loyalty and support to the ANS Thermal Hydraulic Division! I look forward to seeing many of you at this ANS Annual Meeting in Atlanta.

Xiaodong

Xiaodong Sun
2012-2013 Division Chair
ANS Thermal Hydraulics Division
Associate Professor, The Ohio State University
sun.200@osu.edu

Treasurer’s Report

2013 Division Financial Report

2013 Income

THD expects to reserve a membership allocation of \$2 per division member during CY2013. Based on the 2012 membership of 1,112, income of \$2,224 is anticipated.

2013 Division Budget (\$5,550)

The following CY2013 budget was approved at the THD Executive Committee meeting at the 2012 Winter Meeting:

- \$1,800 – Awards and Plaques
 - \$1,000 – Technical Achievement Award (cash award)

- \$500 – Best Paper Award (cash award)
- \$300 – Plaques
- \$500 – Scholarship (NEED) Funding
- \$3,250 – Student Support
 - \$500 – ANS-directed Student Support for Annual and Winter Meetings
 - \$500 – Donation to the 2013 ANS Student Conference
 - \$2,250 – THD-directed Student Support for Annual and Winter Meetings and NURETH-15

2013 Expenses (\$1,564 as of May 7, 2013)

As of May 7, 2013, the following funds have been distributed (including distributions in process):

- \$64 – Awards and plaques (award for 2012 YPTHRC)
- \$500 – Scholarship (NEED) Funding
- \$500 – ANS-directed Student Support for Annual and Winter Meetings
- \$500 – Donation to the 2013 ANS Student Conference

THD Award Account Update

The organizers of NURETH-14 have generously donated \$10,000 to the THD Award Account, bringing the total to **\$25,742**.

DuWayne L. Schubring
 2012-2013 Treasurer
 ANS Thermal Hydraulics Division
 dlschubring@ufl.edu

Honors and Awards Committee Report

TAA Award

The recipients of the 2011 and 2012 Technical Achievement Award are as follows:

- 2011: Professor John Luxat
- 2012: Professor Hisashi Ninokata

The award citation reads "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."



Thermal Hydraulics Newsletter

TAA is an ANS National award and therefore, the recipients were recognized by Prof. Paul Turinsky, ANS

Honors and Awards Committee Chair, at the plenary session of the 2012 ANS Winter Meeting in San Diego, CA.

Prof. Luxat delivered his TAA lecture at the ATH'12 last November. Prof. Ninokata will deliver his TAA lecture at 4:30 pm Tuesday in Room Baker.

Membership Service Term for Three General Members

Upon request by the Executive Committee, the chair determined the membership service year of three general members in order to keep the continuity of the H&A business, function, and smooth transition. The method used in this decision was agreed upon by general members and their terms are listed below:

- Professor Bill Cheung: 1 year (July 1, 2012 to June 30, 2013)
- Professor Yassin Hassan: 2 year (July 1, 2012 to June 30, 2014)
- Professor Jong Kim: 3 year (July 1, 2012 to June 30, 2015)

Chang Oh, Idaho National Laboratory
 2012 Honors and Award Committee Chair
 Chang.Oh@inl.gov

Program Committee Report

With the support of the session organizers, reviewers, and contributing authors, the program committee has put together the following seven summary sessions for the 2013 Annual Meeting at Atlanta. These are:

- Computational Thermal Hydraulics-I, Mon. p.m.
- General Two-Phase Flow, Tues. p.m.
- Thermal-Hydraulics: General, Tues. p.m.
- Thermal Hydraulics in Severe Accidents, Wed. a.m.
- Computational Thermal Hydraulics-II, Wed. p.m.
- Thermal Hydraulics in Advanced High-Temperature Reactors, Thurs. a.m.
- State of the Art in Modeling Fuel Rod Ballooning, Fuel Relocation and High Burnup Issues in LOCA Evaluation Models, Thurs. pm

All of these sessions are all contributed sessions. We received a total of 50 summaries for these sessions and 10 of these summaries were rated as "Rejected Unless Revised" based on the reviewer recommendations. A total of 41 summaries are expected to be presented at this Annual Meeting.

The 2013 Winter Meeting will be held in Washington, DC. The planned sessions for this meeting are:

1. Computational Thermal Hydraulics
2. Enhancements in Light Water Reactor Thermal Hydraulic Performance

3. Experimental Thermal Hydraulics
4. General Two-Phase Flow
5. Highlights of NURETH-15–Panel
6. Thermal Hydraulics of SMRs
7. Thermal-Hydraulics Code Verification and Validation
8. Thermal-Hydraulics Reactor Analyst 2.0–Panel
9. Winning Your First NEUP Proposal as a Young Investigator–Panel
10. Young Professional Thermal-Hydraulics Research Competition
11. Thermal Hydraulics: General

The website (<http://epsr.ans.org/meeting/?m=81>) is open for submission of summaries and the deadline for submission has been extended to June 24, 2013.

In Atlanta, the THD Program Committee meeting will be held on Sunday, June 16, 2013, starting at 2:30 p.m. in the “Greenbriar” conference room. Anyone interested in the program committee activities is invited to participate.

As many of you already know, we have successfully reestablished the NURETH tradition. Every meeting attracts many participants from all around the world. This past May, we had another successful meeting in Pisa, Italy. Please see the NURETH-15 Report by Prof. D’Auria for details. NURETH-16 will be held August 30-September 4, 2015 in Chicago.

Finally, I would like to express my gratitude to all of my colleagues who devote their time to our activities. Thanks to their dedicated efforts, we are able to put together strong programs at numerous meetings. These meetings remain as the prominent venue for scientific information exchange in the thermal-hydraulics community. As always, I 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. I am looking forward to many more successful years.

Kurshad Muftoglu
Program Committee Chair*
PCchair@thd-ans.org

(*: Appointment extended until the transition of new chair in June 2013)

NURETH-15 Report

Summary

The 15th International Topical Meeting on Nuclear Reactor Thermal Hydraulics conference was held in Pisa May 12-17, 2013. F. D’Auria (General Chair) opened the Conference. The Welcome Address Session was chaired by M. Cumo (with

the Honorary Chair, N. Todreas). Key design features of the Conference are listed below:

- The Conference venue included three cities in Tuscany, Florence (‘Corsini Palace’), Lucca (‘Regio Collegio’) and Pisa with four locations (Verdi Theater, Congress Palace, Former Railway Station ‘Leopolda’ and Church ‘Del Carmine’). This needed special logistic arrangements including close attention at each cross-point.
- Specific Conference plans included:
 - Student Sessions
 - Selection of NURETH Fellows (around 6000 authors of all NURETH Conferences, since NURETH-1 in 1980, see below)
 - Poster Session
 - Invited Speakers as distinguished Lecturers and Chairmen introducing the key Plenary Sessions
 - Pre-Conference and Post-Conference Workshops.
- A NURETH poster was created including the names of all NURETH authors (from NURETH-1 to NURETH-15, around 6000 scientists as already mentioned) and pictures from each NURETH Conference. About five hundred scientists, 432 registered participants with payment, NURETH Fellows, selected Invited Speakers, and undergraduate students from University of Pisa (who also served as stewards in each of the Conference sessions and places), attended the NURETH-15 Conference.

Country Statistics

The list of papers based on the Country of the ‘presenter’ is given in alphabetic order and including European Commission: Argentina 5, Australia 1, Belgium 4, Brazil 2, Bulgaria 1, Canada 14 (including 3 invited), China 26 (including 1 invited), Czech Republic 4, European Commission 4, Finland 4, France 39 (including 3 invited), Germany 47 (including 2 invited), Greece 2, Hungary 5, IAEA 1, India 12, Italy 22 (including 2 invited), Japan 43 (including 3 invited), Korea (Republic of) 39 (including 1 invited), Lithuania 2, Malaysia 1, Netherlands 8, Poland 3, Russia 12 (including 1 invited), Saudi Arabia 2, Serbia 2, Slovenia 2, Spain 13, Sweden 16 (including 1 invited), Switzerland 25 (including 2 invited), Taiwan 9, Turkey 4, United Kingdom 6, USA 80 (including 10 invited), Vietnam 1

TOTAL 461 (including 29 Invited Speakers)

Awards

Twenty-seven (27) scientists were selected among about 6000 authors of NURETH papers and nominated NURETH Fellows. The criteria that were used for the selection of NURETH Fellows have been given in the NURETH-15 website. Three of them (independent of their participation in the Conference) received a ‘Special Award’ in the occasion of NURETH-15 Conference and two of the three provided invited speeches in the occasion of the official dinner of the Conference (Florence, Palazzo Corsini). The ceremony for the NURETH Fellow awards was chaired by Prof. N. Todreas,

Honorary Chair of NURETH-15. All NURETH-15 participants attended the ceremony.

Final Remarks

The engagement and the dedication other than of the authors of the about 500 papers, of the TPC members, of reviewers, of Session Chairs, of Invited Speakers, of Awards Committees Members and Chairs, of the Special Session proponents, of the Sponsoring Organizations, of Organizers of Pre- and Post-NURETH-15 Workshops, of the Organizing Committee, made the success of the NURETH-15 Conference possible. The contributions from all of them is gratefully acknowledged.

Follow-up activities to be finalized during the forthcoming months include:

- Journal publication of Special issues from NURETH-15 Conference, to be coordinated by the Publication Committee.
- Invited Speakers contributions with possible publication of a devoted booklet or of a Journal Special Issue.
- Lessons learned and perspectives from the papers published in the Proceedings. To this aim, the Session Chairs will be contacted with the request to send their impressions from the chaired session(s).
- Preparation of a NURETH-15 Panel Session at the ANS 2013 Winter Meeting.
- Transferring the NURETH-15 material in reference to the documentation supporting the nomination of NURETH Fellows to the ANS THD and the Organizers of the NURETH-16 Conference.

Detailed information is available on the website (www.NURETH15.org).

Francesco D'Auria
NURETH-15 Conference Co-Chair

NUTHOS-10 Announcement

The 10th International Topical Meeting on Nuclear Thermal-Hydraulics, Operation and Safety (NUTHOS-10) will be held December 14-18, 2014 in Okinawa, Japan. The meeting will be sponsored by Atomic Energy Society of Japan and co-sponsored by ANS THD among others.

The first NUTHOS was held in Taipei in 1984 followed by Tokyo (1986), Seoul (1988), Taipei (1994), Beijing (1997), Nara (2004), Seoul ((2008), Shanghai (2010), and Kaohsiung (2012). The success of the previous conferences clearly indicates the high interest of the international nuclear community in NUTHOS and leads to the establishment of NUTHOS as one of the major international conferences in the fields of nuclear thermal hydraulics, operation, and safety.

NUTHOS-10 will continue the NUTHOS tradition to provide the international nuclear industries, research institutions, and academia an open forum for exchanging state-of-the-art research results and engineering experiences at this critical time for nuclear industry. The tentative deadline for abstract submission is February 28, 2014.

Okinawa consists of 160 islands of various sizes that are scattered across a vast area of ocean. The temperature in winter is about the same as that of springtime in Tokyo and Osaka, making it warm and comfortable throughout the year. With Okinawa being in the subtropical zone, you can enjoy beautiful flowers in any season. Another highlight is the inhabitation of many rare species of plants and animals. The crystal blue sea, with white sand beaches and colorful fish dancing through coral, attracts vacationers as a holiday resort area with many diving spots.

On behalf of the NUTHOS-10 organizing committee, it is my greatest pleasure to invite you to attend the NUTHOS-10 conference and welcome you to Okinawa.

Hisashi Niokata
Politecnico di Milano
NUTHOS-10 General Chair

NURETH-16 Announcement

The 16th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-16) will be held from August 30 to September 4, 2015 in downtown Chicago, IL, USA. The meeting will be sponsored by the American Nuclear Society Thermal Hydraulics Division and hosted by the ANS Chicago Local Section.

Building on the foundation of past meetings, including the successful NURETH-15 in Pisa, Italy, NURETH-16 invites experts in the field of thermal hydraulics from around the world to share their research and discuss important issues related to thermal-hydraulics in nuclear reactors. NURETH-16 will also be a venue for organizations to showcase their expertise in nuclear reactor technology, with opportunities for meeting sponsors to exhibit their products and services to the nuclear reactor thermal-hydraulic community. You will find more information about the meeting at <http://nureth16.anl.gov/> in the near future.

Chicago is one of America's greatest cities, and is one of the most easily accessible destinations in the U.S. for travelers from around the world due to its central location. Attendees will just be a short distance from Chicago attractions, such as Navy Pier, architectural boat tours, theatrical and musical entertainment and countless dining and shopping options.

On behalf of the NURETH-16 organizing team, I would like to cordially invite you to attend NURETH-16. Welcome to Chicago!

Michael Corradini
University of Wisconsin-Madison
NURETH-16 Co-General Chair

Web Page 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.

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 (see contact information below).

Elia Merzari has started officially as THD webmaster effective at the end of the 2012 Winter Meeting in San Diego, stepping in for DuWayne Schubring (University of Florida). I invite all THD members to contact me with any suggestions for improvements, additions, or general comments.

Elia Merzari, Argonne National Laboratory
THD Webmaster
E-mail: emerzari@anl.gov

Nominating Committee Report

The current Division Officers and Executive Committee members are listed below.

Current Year THD Officers (June 2012 – June 2013):

Division Chair: Xiaodong Sun, sun.200@osu.edu
Vice Chair/Chair-Elect: David Aumiller, david.aumiller.contractor@unnpp.gov
Secretary: Si Young Lee, si.lee@srnl.doe.gov
Treasurer: DuWayne L. Schubring, dlschubring@ufl.edu

Executive Committee Members:

Steven A. Arndt steven.arndt@nrc.gov
David Aumiller david.aumiller.contractor@unnpp.gov
Xu Cheng xu.cheng@kit.edu
Fan-Bill Cheung fxc4@psu.edu
Francesco D'Auria dauria@ing.unipi.it

Yassin A. Hassan y-hassan@tamu.edu
Takashi Hibiki hibiki@purdue.edu
Jong H. Kim jkim@epri.com
Seungjin Kim skim@psu.edu
Si Young Lee si.lee@srnl.doe.gov
Kurshad Muftuoglu kurshad.muftuoglu@ge.com
W. David Pointer dpointer@anl.gov
DuWayne L. Schubring dlschubring@ufl.edu
Chul-Hwa Song chsong@kaeri.re.kr
Xiaodong Sun sun.200@osu.edu
Brian Woods (ex-officio) woods@ne.orst.edu
Hans D. Gougar* Hans.Gougar@inl.gov

*: Chair of the ANS Professional Divisions Committee, ex-officio member without vote

Committee Chairs:

Program Committee – Kurshad Muftuoglu
Honors and Awards Committee – Chang Oh
Nominating Committee – Brian Woods
Membership Committee – Brian Woods

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.

Brian Woods, Oregon State University
2011-2012 Chair - ANS Thermal Hydraulics Division
brian.woods@oregonstate.edu

Total THD Membership (As of April 30, 2013) (Provided by ANS Headquarters)

Educational Inst.-Staff	12%	144
Students	22%	276
Utility	11%	135
Consulting Company	9%	117
National Laboratory	9%	115
Manufacturer	7%	92
Arch./Construction	6%	80
Retired	5%	68
Govt. Agency	5%	61
Supplier	5%	57

Service Company	3%	40
Other	2%	30
Prvt. Research Lab	2%	23
Test Laboratory	0.3%	4
Construction Company	0.2%	2
Medical Inst.	0.2%	2
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Total	100%	1,246
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