



THERMAL HYDRAULIC DIVISION NEWSLETTER

Fall 2009

Message from the Chair



Dear Colleagues,

Greetings from the NURETH-13 conference in Kanazawa City, Japan. I am writing this message having just returned to my hotel from a very enjoyable conference banquet.

I commend the conference organizers on their tremendously successful effort to remove borders among researchers from around the world, reflecting well our Division's globally-oriented mode of operation. Participants from overseas have been in the spotlight in all aspects of this week's conference, including the technical program, opening and closing ceremonies and social events. A slide shown during the opening ceremony revealed an unusually large contingent of student attendees from abroad. We were intertwined to the extent that the participants' home countries were often unclear and unnecessary information.

As I looked around the plenary hall, I noted that our Division's vice-chair/chair-elect, from Japan, and a recent past Chair, from South Korea, were among the attendees. We maintain a steady stream of Executive Committee members and Officers from abroad who are elected to their posts by the Division members. This speaks well of our members as we strive to become an international Division and make our own efforts to remove borders within the nuclear technical community.

The past few Chairs of the Thermal Hydraulics Division have reported on the healthy state of our Division and I am pleased to be able to do the same. A key indicator of the Divisions vitality, the number of members with paid membership, is 975 as of July 2009. To this may be added 143 paid student memberships. As of December 31, 2008, our Division membership comprised 9.3% of the total ANS membership. (Note: the Treasurer's report will indicate a membership of

1022 as of Dec. 31, 2008. Membership drops each July as unpaid members are removed from the database. We are on track to exceed last year's membership by the end of the year.) Other than a slight decrease in the Student Membership for 2008, both student membership and regular membership numbers have continued to rise for several years.

I am currently preparing our Professional Division report, which will be presented to the ANS Board of Directors at the upcoming ANS Winter Meeting in Washington DC. You will be kept up-to-date with how we meet the Society's key measures. Our current efforts include:

- Student and Young Member support
Members from these groups are essential to the future of the Division. We encourage them to become involved in the Division and provide financial support for student national conferences, meeting travel and scholarships.
- Young Member Group participation
We are working with the Young Members Group, serving as their Technical Division sponsor so that they may host technical sessions at the national meetings. Future Young Professional Thermal Hydraulics Research Competitions will be held in cooperation with the Young Members Group.
- Collaboration with other Divisions
This effort includes co-sponsoring technical sessions.
- Professional development programs
The Division is considering offering tutorial sessions at national meetings on specific topics
- High quality research presentations
The Division hosts not only abstract-only sessions, but also full-length paper sessions at ICAPP and other conferences.

I encourage you to look at the Preliminary Program for the 2009 ANS Winter Meeting and join us in Washington DC this November (http://www.new.ans.org/meetings/m_64) for our eight technical sessions. Kurshad Muftuoglu lists the sessions later in this newsletter under the Program Committee report. Some highlights:

Bob Martin of AREVA took the lead in organizing the Special Session on Research Contributions of Professor Larry Hochreiter. The timing of the session was delayed to the upcoming meeting so that the session could be held nearer to Larry's stomping grounds, in anticipation that more of his

family, colleagues and friends will be able attend. Papers will cover research topics that Larry made contributions to. Authors will include colleagues, former students and mentees.

Chang Oh has assembled an impressive list of speakers for a panel session on very high temperature reactors. Not limited to thermal hydraulics, the discussion will also include control, safety, materials and government perspectives on the NGNP.

A panel session organized by Kurshad Muftuoglu (GE-Hitachi) and Ken Yueh (EPRI) will cover industry and government positions on the revision to 10CFR50.46 Loss of Coolant Accident criteria. In this timely session, an invited group of speakers will discuss the technical and regulatory basis for revisions and the implications.

A recent change among our volunteers, Bob Martin will pass the Division's webmaster baton to DuWayne Schubring, Assistant Professor at University of Florida and THD member. A big **thank you** is due to Bob for maintaining the site for several years. We look forward to working with DuWayne. Take a moment to look at our webpage: <http://thd.ans.org>.

The new officers, Professor Hisashi Ninokata (vice chair/chair-elect), Professor Xiaodong Sun (Treasurer), Professor Brian Woods (Secretary) and I are endeavoring to lead the Division through another productive year. We welcome communication from anyone who would like to volunteer their time and efforts.

Thank you for your continued loyalty to the ANS Thermal Hydraulic Division. Feel welcome to contact me and let me know how we can improve Division services. Looking forward to seeing you in November!

Karen

Karen Vierow, Texas A&M University
2009-2010 Division Chair
ANS Thermal Hydraulics Division
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Honors and Awards Committee Report

2009 Thermal Hydraulics 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, the THD is pleased to recognize Professor Mujid S. Kazimi from the Massachusetts Institute of Technology as the 2009 Technical Achievement Award winner. As an ANS National Award, Prof. Kazimi will be formally recognized at the ANS National Honors and Awards Banquet on Tuesday, November 17, 2009. The citation to appear on his award plaque will recognize his "Pioneering role in the fields of design and safety analysis of nuclear power plants, nuclear fuel cycles, and fusion technology."

Prof. Kazimi received a B.S. degree in Nuclear Engineering from Alexandria University in 1969 and an M.S. and Ph.D. in Nuclear Engineering from MIT in 1971 and 1973, respectively. His professional achievements include thermal hydraulic modeling of liquid-metal fast-breeder reactors (LMFBR); development of heat transfer, interfacial exchange and pressure drop models for the THERMIT code supporting LMFBR applications; development early fusion safety methods including the application of risk-based methods; development of steam condensation models for light water reactor (LWR) and Gen-IV plant condenser and containment applications; and LWR high performance fuels research. He has served on the MIT Nuclear Engineering faculty for over 30 years, including 9 years as department head. He is currently the TEPCO Professor of Nuclear Engineering and the Director of the Center of Advanced Nuclear Energy Systems (CANES) at MIT. Prof. Kazimi is a Fellow of the ANS and the American Association of Arts and Sciences.

2009 Best Paper Award

The 2009 THD Best Paper Award recognizes the following technical paper:

Bo Feng, Julien Beccherle, Pavel Hejzlar, and Mujid S. Kazimi, "Thermal Hydraulics of PWRs Transitioning to High Performance Annular Fuel"

This paper was published in the proceedings of the 7th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation and Safety (NUTHOS-7) held October 5-9, 2008 in Seoul, Korea.

Congratulations to all our 2009 honorees!

Robert P. Martin, AREVA NP Inc.
2009-2010 Honors and Award Committee Chair
ANS Thermal Hydraulics Division
RobertP.Martin@areva.com

Treasurer's Report

For 2009, the Division's income of \$24,951 came from the 2008 carry forward and our 2009 member allocation. The Division income from meeting revenue support (i.e., by contributing more than the expected number of technical abstracts) is no longer received because the membership allocation has been increased from \$1/member to \$2/member. THD expenses were support for awards and plaques, national meeting costs, donation to the student conference at University of Florida in April 2009, student travel support to the ANS Annual Meeting (June 2009) and the ANS Winter Meeting (November 2009), and scholarships including the NEED program. Some of these expenses are not yet reflected in the table below.

Awards-related expenses for the year 2009

- THD Technical Achievement Award 2009 at \$1,000 (Not included in the table below yet)
- THD Technical Achievement Award plaque (\$65 to 85, not included in the table yet)
- Young Professionals Thermal Hydraulic Research Presentation Award plaque (not included in the table yet)
- Best Paper Award at \$500 (not included in the table yet)
- Best Paper Award plaque (not included in the table yet)
- Recognition plaque for outgoing Division Chair

TOTAL EXPENSES as of 08/31/09		6,000
Balance as of 08/31/09		18,880

2009 Budget

For 2009, the Executive Committee approved the following expenses at the November 2008 meeting:

- \$1,800 for awards and plaques (same as in 2008)
- \$2,500 for ANS Student Conference support (same as in 2008)
- \$500 total for student travel support to the ANS Annual Meeting (June 2009) and the ANS Winter Meeting (same as in 2008)
- \$500 for Scholarship/NEED (same as in 2008)
- \$2,500 as a special one-time contribution towards endowment of a "distinguished speaker series" in honor of Prof. L. Hochreiter, to be established within the Nuclear Engineering Program at the Pennsylvania State University

This budget, which is based on a spending plan recommended by the Ad-hoc Committee (Vierow, Cheung and Rempe) on Long-Term Finances in 2008, was approved by the EC.

Xiaodong Sun, The Ohio State University
2009-2010 Treasurer
ANS Thermal Hydraulics Division
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Revenue		
Type	Item	
Member Allocation	\$2/THD Member	2,044
Carry Forward from 2008		22,907
Division Income from meeting revenue support		0
TOTAL REVENUE		24,951
Expenses		
Type	Item	
Awards, Plaques		71
Student Conference Support	University of Florida meeting	2,500
Student Travel Support	June 09 Meeting	250
Student Travel Support	Nov. 09 Meeting	250
Scholarship/NEED	Scholarship (\$250) + NEED Program (\$250)	500
Other Expenses	One-time donation to the Larry Hochreiter Endowed Lecture Series	2,500

Program Committee Report

Thanks to the support of the session organizers, reviewers, and other contributing members, the program committee has put together another strong arrangement of sessions for the 2009 Winter Meeting in Washington D.C. Our robust numbers at recent meetings continue to be sustainable.

At the 2009 Winter Meeting in Washington D.C., THD is organizing total of 8 sessions: 6 contributed paper and 2 panel sessions. This meeting also received a high number of summaries for THD sessions. We have received total of 45 summaries. This number places THD among the top divisions supporting the national meetings. Again, let me take the opportunity to thank for all the efforts of the session organizers and the reviewers. The sessions, in chronological order, are:

- Next Generation Nuclear Plant Challenges and Status – Panel [Mon. p.m.]
- Special Session on Research Contributions of Professor Larry Hochreiter [Tues. a.m.]

- 10CFR50.46 Loss-of-Coolant Accident Criteria Revision – Panel [Tues. p.m.]
- Fundamentals of Multiphase Flow [Wed. a.m.]
- Computational Thermal Hydraulics [Wed. p.m.]
- Thermal Hydraulics Experiments, Data, and Measurement Techniques [Thur. a.m.]
- Thermal Hydraulics of Advanced Reactors [Thur. a.m.]
- General Two-Phase Flow [Thur. p.m.]

In addition to these sessions, the division is supporting the session titled “Innovation in Thermal Hydraulics” as part of the embedded topical meeting 2009 Young Professional Congress.

For the 2010 Annual Meeting at San Diego, CA, the division is planning to organize seven sessions. One of these sessions is a panel on Regulatory Guide 1.157 Revisions. Another session, Scaling Analysis Techniques, will be a tutorial. The sessions planned for the Annual Meeting are as follows:

- General Thermal Hydraulics
- Computational Thermal Hydraulics
- Computational Two-Phase Flow
- Scaling Analysis Techniques – Tutorial
- Regulatory Guide 1.157 Revisions – Panel
- Thermal Hydraulics of VHTR
- Thermal Aspects of Nuclear Materials Processing, Handling, and Storage

The THD Program Committee meeting will be held on Sunday November 15, starting at 3:00 p.m. in “Congressional A” room. We are continuously looking for members who are interested in actively participating to support the division. This meeting is a good opportunity to observe the PC activities. To find out more on how to get involved, please contact the Division’s Program Committee chair.

Kurshad Muftoglu, GE-Hitachi Nuclear Energy
 2009-2010 Program Committee Chair
 ANS Thermal Hydraulics Division
 PCchair@thd-ans.org

NURETH-13 Report

As the NURETH-13 Technical Program Committee Chair, I am pleased to report that we have concluded a very successful NURETH conference. The conference was organized by the Thermal Hydraulics Divisions of the Atomic Energy Society of Japan and the American Nuclear Society. It was held at the Ishikawa-Ongakudo and Hotel Nikko Kanazawa in Kanazawa City, Japan, September 27 through October 2, 2009. In attendance were 425 participants (including staff and 84 students) from 30 countries, with 345 papers contributed. Out of 390 registered participants, 160 were from Japan and 230

from other countries. The following table shows the distribution of participants.

Australia	1	Japan	159
Austria	2	Korea	34
Belgium	3	Lithuania	1
Brazil	3	Norway	3
Canada	11	Russia	3
China	7	Spain	5
Czech	1	Slovenia	1
Finland	1	Sweden	12
France	28	Switzerland	17
Germany	39	Taiwan	4
Ghana	1	The	8
Hungary	1	Tunisia	1
India	4	UK	2
Italy	9	USA	29

Paper contributions by country are shown the following figure.

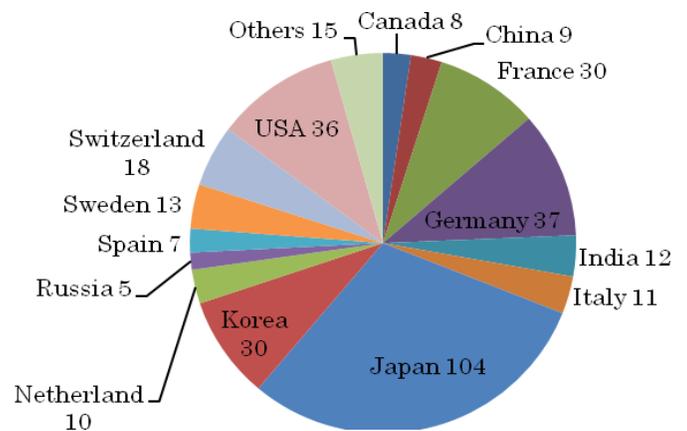


Figure 1. NURETH-13 Paper Contributions by Country.

Because of this unexpectedly large number of the paper contributions, the Local Organizing Committee was forced to secure additional conference rooms in June. A conference of this magnitude would never have been possible without the help of many people. I would like to express my thanks to all those who provided assistance behind the scenes as well as to the Local Organizing Committee members for their efforts.

The ability to maintain the technical high quality of the NURETH-13 conference depended largely on the review process. This year we required at least three reviewers per paper and reserved 3 months for paper reviews prior the submission of final papers. This was a tough policy for all the reviewers who volunteered to help because there were more than 350 papers to review, implying that we needed more than 1000 reviews in total. This high quality review process was completed thanks to the self-sacrificing dedication of the topic

organizers, session organizers and, in particular, approximately 420 reviewers who reviewed three papers on average. I would like to express our sincere thanks to all 420 reviewers for their excellent work.

The 345 technical papers were presented in 80 technical sessions including 8 keynote lecture sessions and 4 plenary sessions. All sessions were well attended. The 8 invited keynote lectures were conducted by world leading experts in their area. The plenary sessions (held on the first day just after the opening ceremony and in the morning of the third day) included Honorary Chair Prof. Neil E. Todreas's lecture entitled "Enhancing Reactor Core Thermal Performance through Inverted Fuel Design" and Prof. Okamoto's lecture on visualization given in memory of the late Prof. M. Akiyama, the Honorary Co-Chair, who passed away last April. On the last day of the conference a special panel session was held on "Nuclear Reactor Thermal Hydraulics – Current and Future: Part I Country View on THD issues and Part II the Simulation Paradigm." Many thanks go to all the panelists and in particular to Prof. B. R. Sehgal for steering the discussions as a moderator. Also I am personally grateful to him for saving one keynote session by preparing and reading a lecture for a lecturer who could not show up due to the flu.

The opening ceremony on Monday morning was preceded by the "Pre-Opening Mini Concert" with the traditional Japanese harp ensemble as a part of the "2009 Biennale of Ishikawa Autumn Art Festival." The banquet started promptly at 6:30PM, Tuesday, September 29, with a serene and solemn "ICCHO-IKKAN" (one drum and one flute) performance. Unfortunately, late comers missed out on this as it was a "closed-door" performance. During the banquet, a surprise award ceremony was conducted for Prof. M. Podowski for his perfect attendance record at the NURETH conferences from 1980 to 2009.

The closing session was attended by more than 100 participants, who were encouraged to attend the upcoming NUTHOS-8 conference in Shanghai one year from now and the NURETH-14 conference in Montreal in 2011. Friday was reserved for the technical tour. There were 78 people who participated in the technical tour which included the Japanese Fast Breeder Reactor Monju site.

The conference was financially supported by Kanazawa City, Ishikawa Prefecture, IAEA, the Commemorative Organization for the Japan World Exposition '70, the Federation of Electric Power Companies of Japan, and 13 Exhibition participating companies and organizations.

Above all, I hoped and am sure by now that the attendees enjoyed not only the conference but also the historic Kanazawa city and friendship.

Hisashi Ninokata, Professor, TITech
Technical Proram Chair, NURETH-13
2009-2010 Vice Chair
ANS Thermal Hydraulics Division
hninokat@nr.titech.ac.jp

Web Page Report

After more than a decade as THD Webmaster, Robert Martin will be stepping down as of this year's ANS Winter Meeting. I (DuWayne Schubring, Assistant Professor of Nuclear and Radiological Engineering at the University of Florida) have agreed to take the reins and am currently acting as Webmaster-in-Training. I'd like to take this opportunity to thank Dr. Martin for his years of service and for offering me the opportunity to succeed him in this position.

You may notice some changes to the website over the next year or two as part of an effort to improve the user experience and to simplify some things behind-the-scenes to facilitate easier updating in the future. The THD website is first and foremost designed to serve the needs of the THD membership. If you have any suggestions on new content or revised presentation, please do not hesitate to contact me via e-mail or at professional meetings.

DuWayne Schubring, University of Florida
Webmaster-in-Training
ANS Thermal Hydraulics Division
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Division website: <http://thd.ans.org>

Nominating Committee Report

Based on election early this year the current Division Officers and Executive Committee members are listed below.

Executive Committee (3 year term)

Current Year THD Officers:

Division Chair: Karen Vierow, vierow@ne.tamu.edu
Vice Chair: Hisashi Ninokata, hninokat@nr.titech.ac.jp
Secretary: Brian Woods, brian.woods@oregonstate.edu
Treasurer: Xiaodong Sun, sun.200@osu.edu

Executive Committee Members

Karen Vierow (2010)	vierow@ne.tamu.edu
Kurshad Muftuoglu (2010)	PCchair@thd-ans.org
Xiaodong Sun (2010)	sun.200@osu.edu
Robert Martin (2010)	RobertP.Martin@areva.com

Hisashi Ninokata (2011) *hninokat@nr.titech.ac.jp*
Brian Woods (2011) *Brian.Woods@oregonstate.edu*
Hee Cheon No (2011) *hcno@kaist.ac.kr*
David Aumiller (2011) *aumiller@bettis.gov*
Randall O Gauntt (2012) *rogaunt@sandia.gov*
John Luxat (2012) *luxatj@mcmaster.ca*
Stephen Bajorek (2012) *Stephen.Bajorek@nrc.gov*
Frepoli, Cesare (2012) *FrepolC@westinghouse.com*

Committee Chairs:

Program Committee – Kurshad Muftuoglu,
Honors and Awards Committee – Bob Martin
Nominating Committee – Chang Oh
Membership Committee – Chang Oh

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.

Chang Oh, Idaho National Laboratory
2009-2010 Nominating Committee Chair
ANS Thermal Hydraulics Division
Chang.Oh@inl.gov