



CALL FOR PAPERS



ST-NH<sub>2</sub>

## American Nuclear Society Embedded Topical: International Topical Meeting on the Safety and Technology of Nuclear Hydrogen Production, Control, and Management

In conjunction with the

2007 Annual Meeting of the American Nuclear Society  
June 24 – 28, 2007 - Boston, Massachusetts

The International Topical Meeting on the Safety and Technology of Nuclear Hydrogen Production, Control, and Management (ST-NH<sub>2</sub>) is a topical meeting embedded in the Annual Meeting of the American Nuclear Society (ANS) and will be held in Boston, Massachusetts, June 24–28, 2007. The ST-NH<sub>2</sub> Topical is sponsored by the Nuclear Installations Safety Division and the Environmental Sciences Division's Working Group on the Nuclear Production of Hydrogen. Fuel Cycle and Waste Management and Thermal Hydraulics are cosponsoring divisions. Carl Sink, of the U.S. Department of Energy's (DOE's) Office of Nuclear Energy, Science and Technology and DOE's Nuclear Hydrogen Initiative Program, is the general chair, and Dr. Paul Kruger of Stanford University is the Honorary Chair.

The ST-NH<sub>2</sub> Topical will provide unique opportunities to report on research and development, safety, program planning, and regulatory professionals and to discuss

progress, status, experience, and near-term goals in hydrogen production, control, and management based on nuclear systems. Because hydrogen is a common link, nuclear

## *ANS ST-NH2 Embedded Topical Meeting*



safety and technology themes will be highlighted in the areas of nuclear production and control as well as nuclear waste processing and management.

Papers on domestic and international experiences are sought. The goal for the ST-NH<sub>2</sub> Topical is 70 to 80 papers with approximately two-thirds expected from the areas of nuclear production and control and one-third from nuclear waste and management. Both technical paper sessions and panel sessions are anticipated, with opening and closing plenary sessions.

Full, peer-reviewed papers will be both stimulated and invited. We plan for summaries to be due by January 5, 2007, with author notification later in the month. Full, peer-reviewed papers are planned per ANS format and content requirements. The CD-ROM proceedings will be available at registration during the 2007 June Annual Meeting.

Opening plenary sessions for this topical will be held Monday afternoon, June 25, 2007. Paper and panel sessions are planned for Tuesday, June 26<sup>th</sup> through Wednesday, June 27<sup>th</sup>. Concluding sessions and a final insights-highlights panel will conclude the meeting on the morning of Thursday, June 28<sup>th</sup>.

All official communications will be via electronic media.

### **Conference General Chair**

Carl Sink – U.S. Department of Energy  
E-mail: [carl.sink@nuclear.energy.gov](mailto:carl.sink@nuclear.energy.gov)

### **Honorary Chair**

Paul Kruger – Stanford University  
E-mail: [pkruger@stanford.edu](mailto:pkruger@stanford.edu)

### **Technical Program Chair**

Kevin O'Kula – Washington Safety Management Solutions LLC  
E-mail: [kevin.okula@wsms.com](mailto:kevin.okula@wsms.com)

### **Assistant Technical Program Chair**

Jeff Hudson – Washington Safety Management Solutions LLC  
E-mail: [jeff.hudson@wsms.com](mailto:jeff.hudson@wsms.com)



The following table lists the technical tracks in which the ST-NH<sub>2</sub> Topical will solicit summaries and full papers

Track	Topical Area	Technical Content and Purpose
1.	<b>Nuclear Production Technology Programs: Status and Progress</b>	<p>The purpose is to exchange information on current developments in national and multinational research and development programs. Papers are solicited in the following areas:</p> <ul style="list-style-type: none"> <li>• U.S. Program</li> <li>• Pacific Rim Programs</li> <li>• European Programs</li> <li>• Research Reactor Programs</li> </ul>
2.	<b>Nuclear Technology Development: Status and Progress</b>	<p>The purpose is provide updates on the technology and safety developments for hydrogen production options including, but not limited to,</p> <ul style="list-style-type: none"> <li>• High-Temperature Electrolysis</li> <li>• Thermochemical Cycles</li> <li>• Hybrid Cycles</li> <li>• Steam Reforming</li> <li>• Fusion-Based and Advanced System Production</li> <li>• Integrated and Co-Generation Systems</li> <li>• Balance-of-Plant</li> </ul>
3.	<b>Safety Aspects of Nuclear Production of Hydrogen</b>	<p>The theme of this area is on reactor safety aspects of nuclear production of hydrogen, for both in-reactor and ex-reactor systems. Aspects to considered are</p> <ul style="list-style-type: none"> <li>• Reactor Safety Issues</li> <li>• Ex-Reactor and Balance of Plant</li> <li>• Transport and Infrastructure</li> </ul>
4.	<b>Systems and Risk Studies</b>	<p>The emphasis in this area is to discuss various systems analysis and risk studies. The latter includes probabilistic risk analysis and other types of risk assessment for examining</p> <ul style="list-style-type: none"> <li>• Nuclear Production of Hydrogen</li> <li>• Control and Management of Hydrogen</li> </ul>
5.	<b>Environmental Aspects of Nuclear-Based Hydrogen Production</b>	<p>The focus of this area is on studies or white papers providing evaluation of comparative effects to the environment using hydrogen-based systems. Some possible topics in this area are</p> <ul style="list-style-type: none"> <li>• Acute, Short-Term Effects</li> <li>• Chronic, Long-Term Impacts</li> </ul>
6.	<b>Socioeconomic Perspectives</b>	<p>The purpose of this topical area is to present recent work on societal and economic benefits and/or trade-offs with hydrogen-based systems.</p>



Track	Topical Area	Technical Content and Purpose
7.	<b>Computer Code Development for Safety and Process Optimization</b>	<p>The purpose is to provide a forum to exchange information on current developments in the use of software for safety, process optimization, and other applications. The following areas are suggested topics to consider:</p> <ul style="list-style-type: none"> <li>• Analytical Software Development</li> <li>• Process Control and Programmable Logic Control Software Innovations</li> <li>• Experience with New Generation Software</li> <li>• Software Quality Assurance</li> </ul>
8.	<b>Hydrogen Control in Nuclear Power Plants</b>	<p>The purpose of this topical area is to share operational experience with control of hydrogen in nuclear power plants and related support facilities. Suggested papers could include</p> <ul style="list-style-type: none"> <li>• Operational Experience and Lessons Learned</li> <li>• New Technologies and Implementation</li> </ul>
9.	<b>Materials Issues: Applied Research and Development</b>	<p>This area will focus on materials issues associated with control and management of hydrogen. Papers to be considered in this area include</p> <ul style="list-style-type: none"> <li>• Production</li> <li>• Storage</li> <li>• Operating Plants</li> <li>• Test Design, Protocol, and Quality Assurance</li> <li>• Other Systems: Active and Passive</li> </ul>
10.	<b>Waste Processing and Storage Safety</b>	<p>The focus of this area is to address hydrogen issues in waste processing and storage facilities. Specific areas include but are not limited to</p> <ul style="list-style-type: none"> <li>• Hydrogen Control in Waste Processing Facilities</li> <li>• TRU Waste Drum Management</li> <li>• Worker Safety Issues.</li> </ul>
11.	<b>Regulatory Perspectives and Safety Culture</b>	<p>The purpose is to provide a forum to exchange information on current programmatic and technical issues related to regulation and promoting a safety culture in the nuclear production, control, and management of hydrogen.</p> <ul style="list-style-type: none"> <li>• Risk-Informing Paradigms</li> <li>• Chemical Industry Lessons Learned</li> <li>• IAEA, NRC, DOE, OSHA, and EPA Perspectives.</li> </ul>
12.	<b>Emerging Topics</b>	<p>The submittal of new and timely information on safety and technology improvements, issues on implementation, and late-breaking events will be considered for a poster session. Details to be arranged in early 2007.</p>



### Electronic Submission Deadlines

- **450- to 900-word summaries due:**  
**January 5, 2007**
- **Author notification of summary acceptance:**  
**January 26, 2007**
- **Full papers due:**  
**March 15, 2007**
- **Author notification of full paper acceptance:**  
**April 12, 2007**
- **Final papers due:**  
**May 3, 2006**

Summaries submitted after the indicated date will not be considered without prior approval of the technical program chair.

Full papers submitted after the indicated dates will not be considered without prior approval of the appropriate topical area leader contacted through the technical program chair.

### Format

Authors are REQUIRED to use the ANS Template and “Guidelines” for Full Paper submissions provided at

- <http://www.ans.org/pubs/proceedings/>

Summaries and full papers must be submitted electronically. Summaries may be submitted in either Adobe Acrobat (PDF) or Microsoft WORD format; however, the PDF format is strongly preferred because of its fidelity of transmission. It is encouraged that full

papers be submitted in both formats. Full papers not based on the ANS Template will be rejected.

### Content

1. Please submit work that is NEW, SIGNIFICANT, and RELEVANT to the objectives of NST-H<sub>2</sub> and that covers the topical areas and technical content suggested in the table.
2. SUMMARY ONLY: The title should be immediately followed by the author; suggested technical topical area(s) should be taken from those listed and described in the table.
3. Introduction: State the purpose of the work.
4. Description: Describe the actual work.
5. Results: Present the significant results in a form readily understandable by readers less familiar with the work.
6. Future Work: When appropriate, describe future work that is planned or should be undertaken.
7. Conclusions: Provide significant conclusions supported by the results, and discuss their significance.
8. References: Include sufficient references to ensure that background, directly related, and quoted work are appropriately recognized. English is the recognized language of the conference and industry. References not in English should be minimized. In addition, references not available in the public domain are unacceptable and may be cause for rejection.



## **Length**

### **SUMMARY**

1. Use at least 450 words, excluding tables and figures.
2. Use no more than 900 words, including tables and figures. Count tables and figures as 150 words each. Use no more than three tables and/or figures.
3. Limit title to ten words; limit authors to three if possible.
4. Include only the most significant references and do not include in the word count.

### **FULL PAPERS**

1. Limit the paper to 8 pages, including figures, tables, and references.
2. Limit title to ten words; limit authors to three if possible.

## **Standards**

All appropriate ANS standards will be enforced for solicitation, acquisition, review, content, format, and publication of the conference papers.

## **Publication and Presentation**

ANS will publish all accepted papers in a CD to be available at the meeting. A page charge of \$25 per page shall be billed to the primary author for each full paper that is accepted for CD publication.

Papers are presented orally at the meeting, and presenters are expected to register for the meeting. Papers in the *Emerging Topics* session will be considered for a poster presentation during ST-NH<sub>2</sub>.

If designated at registration, a CD will be provided at no additional cost to the registered attendees. Additional CDs may be purchased from ANS.

Papers become the property of ANS, and authors are responsible for execution and transmission of the ANS copyright release form. Authors are responsible to protect classified or proprietary information.

Papers should not be published in any other publication prior to presentation at the ANS embedded topical meeting. It is planned to publish a subset of the papers selected by the TPC in an ANS publication.



<b>Technical Program Committee – {October 2006}</b>
<b>Name/Organization</b>
Kevin O’Kula (Chair), Washington Safety Management Solutions LLC
Mel Buckner, Savannah River National Laboratory and University of South Carolina
D. Allan Coutts, Washington Safety Management Solutions LLC
Ben Cross, Savannah River National Laboratory
Randy Gauntt, Sandia National Laboratories
David Henderson, DOE, GNEP
Steve Herring, Idaho National Laboratory
Jeff Hudson (Assistant Chair), Washington Safety Management Solutions LLC
Herbert Massie, Defense Nuclear Facilities Safety Board
Carl Mazzola, Shaw Environmental
Jim O’Brien, Idaho National Laboratory
Vanice Perin, U.S. Nuclear Regulatory Commission
Shripad Revankar, Purdue University
Salvador Rodríguez, Sandia National Laboratories
Layla Sandell, Electric Power Research Institute
Ken Schultz, General Atomics
Steve Shepherd, Southern California Edison
Carl Stoots, Idaho National Laboratory
Stephen L. Turner, Science Applications International Corporation
Jan van Erp, Consultant
Allen H. Weber, Consultant
Gary Wilson, KatJon Services
Keith Woodard, ABS Consulting