NED
NUCLEAR ENGINEERING DIVISION
1993 Marx Issacs Award Recipient
NEWSLETTER
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Longtime NED Leader Nathan Chipman Named AIChE Fellow, Wins 2003 Robert E. Wilson Award

Congratulations to Nathan Chipman! He has received high honors from both AIChE and NED recognizing his achievements. In 2003, he was elected a Fellow of AIChE. This is the highest membership grade in AIChE. The Grade of Fellow is a special category of AIChE membership, reserved for those tenured Institute members who have displayed significant service to AIChE and the profession, and who have achieved significant accomplishments in Chemical Engineering.

As described in the AIChE Constitution, Fellows "...shall have been in chemical engineering practice for twenty-five years and shall have been a Member [of AIChE] for at least ten years." Election as Fellow..."shall be recognition of professional attainment, and significant accomplishment in engineering."

Now Nathan has been selected as the winner of NED's Robert E. Wilson award for 2004. This award is presented annually by the NED for outstanding chemical engineering achievement in the nuclear industry. Nathan works for Bechtel BWXT Idaho at the Idaho National Engineering and Environmental Laboratory. Nathan has served in many capacities for the INEEL and on DOE-wide work as well. He is being recognized for his achievements in management of spent nuclear fuel, special nuclear materials, and high level waste and in education of chemical engineers.

Nathan will receive his award on April 28 at a special luncheon at the New Orleans meeting. See the separate article on the New Orleans meeting in this edition of the newsletter. We hope you'll join us in recognizing him for his achievements and for these honors.

See You in New Orleans!

You're invited to join the Nuclear Engineering Division as it celebrates its 50th anniversary during the AIChE Spring 2004 National Meeting, to be held April 25-29 at the Hyatt Regency Hotel in historic New Orleans. The AIChE Nuclear Engineering Division program will feature 50 papers on diverse nuclear chemical topics. Session topics include Advances in the Separation and Immobilization of Hanford Nuclear Wastes, Recent Advances in Chemical Separation Processes for Tank Waste Treatment, Novel Hydrogen Generation Processes, Advances in Separation of Savannah River Site Nuclear Waste, and a special 50th anniversary session with five distinguished invited speakers. Details are provided below. For further information, contact Paul d'Entremont, NED Chair, by phone at (803) 208-8727, or by e-mail at paul.dentremont@srs.gov. Or go to the AIChE conferences web site at http://www.aiche.org/conferences/techprogram/groupdetail.asp?GroupCode=14&DSN=spring04.

AIChE Spring 2004 National Meeting (Hyatt Regency, New Orleans, April 25 - 29)

NED Technical / Social / Business Program

Monday Morning, April 26, 2004

Advances in Separations and Immobilization of Hanford Nuclear Wastes I

- Partition Coefficients of Selected Anions Using Ion Exchange Separation of Cesium from High Level Waste
- Cesium Removal from Hanford Tank 241-AW-101 Supernatant Using Resorcinol-Formaldehyde Resin
- Comparison of Ion Exchangers for Selective Extraction of Cs-137
- Mixing Effects on the Precipitation and Cross Flow Filtration of a Hanford Simulated Precipitated Radioactive Waste
- Discussion of the Research and Technology Approach Adopted to Underpin the Design of the Cross Flow Filtration Unit Operation for the Hanford Waste Treatment Plant
- Hanford Waste Treatment Plant: Status of the Research, Design and Construction of the World's Largest Radioactive Waste Treatment Plant
- Cesium Removal from Hanford Tank 241-AN-104 Supernatant Using SuperLIG® 644 Ion Exchange Resin

Monday Afternoon, April 26, 2004

Advances in Separations and Immobilization of Hanford Nuclear Wastes II

- Development of Physical and Chemical Simulants for Hanford Radioactive Tank Wastes
- Waste Feed Evaporation Physical Properties Modeling
- Laboratory Reference Material for Shear Strength Measurements
- Evaporation of High Level Waste Cesium Eluate Solutions
- Bench-Scale Evaporation Testing with Actual Hanford Tank Waste Mixed with Recycles
- Application of Rheology Data to the Design and Operation of Nuclear Waste Processes at the Hanford Waste Treatment Plant

- Recovery of Pu-238 Oxide by Molten Salt Oxidation Processing of Pu-238 Oxide Contaminated Combustibles

Monday Afternoon, April 26, 2004

Recent Advances in Chemical Separation Processes for Tank Waste Treatment

- Chlorinated Cobalt Dicarbollide-Based Solvent Extraction Processes for the Separation of Cs, Sr, and Actinides from Acidic Waste
- Fluidized Bed Treatment of Radioactive Wastes
- Evaporation of High Level Waste Cesium Eluate Solutions
- Development of an In-Situ Mixed Iron Oxide (IS-MIO) Process for the Removal of Strontium and Actinides from Alkaline Tank Waste
- The Effect of Radiation and Caustic Exposure on the Stability of Ryton
- Filtration of a Hanford AN-104 Sample
- Scaling the Filtration of a Hanford Site AN-102 Sample
- Lab-Scale Demonstration of the UREX+ Process

Tuesday Morning, April 27, 2004

Novel Hydrogen Generation Processes (Nuclear and Solar) I

- Model-based Performance Comparisons Between Thermochemical Nuclear Hydrogen Processes
- Sulfur Thermochemical Processes with Inorganic Membranes to Produce Hydrogen
- R&D on Water Splitting IS Process for Hydrogen Production Using HTGR at JAERI
- United States Path Forward for Production of Hydrogen Using Nuclear Energy
- Interfacing the Westinghouse Sulfur Cycle and the PBMR for the Production of Hydrogen
- Catalytic Decomposition of Sulfuric Acid for Thermochemical Water Splitting Processes
- Hydrogen Production through High-Temperature Electrolysis Using Nuclear Power

Tuesday Afternoon, April 27, 2004

Novel Hydrogen Generation Processes (Nuclear and Solar) II

- Utilizing Phosphogypsum Waste towards Hydrogen Fuel Production by Pressure Swing Adsorption Separation of a Biodegradation Gas Product
- Kinetic Study for the Hydrogen, Oxygen, and HCl Production in a Low Temperature Thermochemical Cycle
- Development of the Copper-Chlorine Family of Cycles
- Solar Hydrogen Production via the Solar Thermal Decarbonization of Fossil Fuels
- A Hybrid Thermochemical-Electrolytic Process for Hydrogen Production Based on the Reverse Deacon Reaction
- Improvement of Yield of Nuclear Hydrogen using Semipermeable Membrane Design
- Commodity Inventories and Equipment Sizes for a Low Temperature Nuclear-Chemical Plant for Production of Hydrogen
- Hydrogen Production through High-Temperature Electrolysis Using Nuclear Power

Wednesday Morning, April 28, 2004

Nuclear Engineering Division 50th Anniversary

- A Review of Criticality Accidents in Process Facilities
- Distinguished Chemical Engineering Achievements at the Idaho National Engineering and Environmental Laboratory
- The PUREX Process at Savannah River
- Waste Calcination at the INEEL: Forty Years of Success
- History of Pu-238 Processing at Savannah River Site

Wednesday, April 28, 2004

Robert E. Wilson Award Luncheon

The Nuclear Engineering Division business meeting will be held from 11:30 a.m. until 12:00 noon, followed immediately by the Robert E. Wilson Award Luncheon from noon to 1:00 p.m. Dr. Nathan A. Chipman of Bechtel BWXT Idaho is the winner for 2004. All NED members and other interested parties are invited to the luncheon, which will include presentation of the award and a speech by Dr. Chipman. The luncheon will be held at the Hyatt Regency New Orleans in a room to be announced.

Wednesday Afternoon, April 28, 2004

Advances in Separation of Savannah River Site Nuclear Waste

- Evaluation of Crystalline Silicotitanate and Zeolite
- Selective Precipitation of Plutonium Oxalate to Facilitate Accelerated Deinventory of Materials at the Savannah River Site
- Plutonium Precipitation with Gadolinium as a Neutron Poison
- Pilot-Scale Testing of a Rotary Microfilter with Simulated Savannah River Site Waste
- Strontium and Actinides Removal from Savannah River Site Waste by Monosodium Titanate Adsorption
- Destruction of Tetraphenylborate in High Level Waste Using Fenton's Reagent
- Characterization of Savannah River Site High Level Waste Salt Cake in Support of the Low-Curie Salt Process

If you've been to any of the previous AIChE meetings in New Orleans, you know it's a great place for a meeting. We hope to see you there.

The call for papers for the 2004 AIChE Annual Meeting in Austin, Texas, is open through April 16; see the separate article in this newsletter. Information on this and other future AIChE meetings is available on the AIChE Conferences web page at http://www.aiche.org/conferences/.

Message from the Chair

Paul d'Entremont

Yes, believe it or not, the Nuclear Engineering Division turns 50 years old this year! We've been talking about this for several years, so it's kind of hard to believe that 2004 is really here. I'm pleased to serve as your chair in this banner year for NED.

Ron Denney and Luis Canas, the past two chairs, have organized a 50th anniversary session at the Spring 2004 meeting. Not only will the session highlight some of the significant issues that NED has grappled with in its 50-year history—criticality, the PUREX Process, and a number of other achievements at various DOE sites—but it will also bring together in the same room a number of the key folks who have made significant contributions to the nuclear side of chemical engineering. In fact, one of the speakers, Dave Karraker, has been actively working in the field of nuclear chemistry for more than 50 years. That's why you see the name "Karraker" so often when you look for information on the chemistry of transuranic elements. The session will be on Wednesday morning, April 28, at the Hyatt Regency in New Orleans, LA. Also, please check out the other sessions for Spring 2004 in the separate article in this newsletter. We have a full program, with seven sessions. I'm especially pleased to have two sessions on the expanding field of hydrogen generation from nuclear energy.

Over the last two years, Ron and Luis have worked hard to keep NED active and vital, and I want to maintain that momentum. Ron has volunteered to be the permanent Programming Chair, a newly created position. Our goal is to keep as many people as possible involved in programming, which will promote continuity with previous programs and also promote the synergy that is so important to making programming work.

One area of particular interest to me is forming ongoing relationships with other organizations that have interest in nuclear technology. One strong possibility is the American Nuclear Society's Fuel Cycle and Waste Management Division, which has interests that significantly overlap the interests of NED. Another possibility that has been discussed is the Eagle Alliance, a nuclear advocacy organization (http://eaglealliance.tamu.edu/). NED involvement with the Eagle Alliance would be a major shift for NED, from networking and information exchange to nuclear advocacy. We plan to discuss the pros and cons of this shift at our next business meeting, hopefully at the Spring 2004 meeting.

What do you think? Would you like us to have a closer relationship with the Fuel Cycle and Waste Management Division? What about the Eagle Alliance? Do you have some energy for either of these endeavors? Or do you have other ideas?

Please let us know. Feel free to call me (803-208-8727) or e-mail me (paul.dentremont@srs.gov), or contact any of the division officers or committee members. Contact information is on page 7 of this newsletter and at the NED web page at http://www.ornl.gov/sci/ned/. I look forward to talking to you.

NED Program for AIChE 2004 Annual Meeting (Austin Convention Center, Austin, Texas, November 7-12)

NED is planning on presenting four technical sessions at the AIChE Annual Meeting in Austin this November. The session topics are listed below.

- Advances in Actinide Partitioning
- Novel Hydrogen Generation Processes and Energy Applications Oriented Toward Nuclear Hydrogen I
- Novel Hydrogen Generation Processes and Energy Applications Oriented Toward Nuclear Hydrogen II
- Contract Research Studies in Support of Nuclear Facility Regulations

For a description of the sessions noted above, visit the AIChE programming web page at http://www.aiche.org/Annualapp/previewmodule/grouplist.asp?groupcode=14&PersonID=&Step1=. Feel free to contact the listed chairs or vice-chairs for more information.

The call for papers is now open through 4/16/2004. See http://www.aiche.org/Annualapp/index.asp for instructions on how to submit a Proposal to Present online.

Contributions to Newsletter Welcome from All NED Members

NED welcomes contributions from all its membership for future editions of this newsletter. Potential topics include the following:

- Profiles of outstanding members
- Industry news
- News from your company
- Local section news
- DOE site news
- Relevant political or regulatory developments
- Engineers' Week activities
- Any other topics of potential interest to your fellow members

Please send your ideas or contributions to newsletter editor Keith Hampton via e-mail at bryan_k_keith_hampton@rl.gov.

New Vice Chair for NED

Please welcome Bill Rhodes as the new Vice Chair of NED. Bill was just elected to this position in last year's ballot. Bill is with the Actinide Technology Section at Savannah River Technology Center, where he works with solvent extraction, flowsheet development, and computer modeling of solids precipitation in nuclear fuel dissolution. Previously he was with Exxon Research and Development and then with Westinghouse Electric Corporation at the Naval Reactors Facility in Idaho and at Bettis Atomic Power Laboratory. He received his B.S. from the University of Cincinnati in 1981, his M.S. from Idaho State University in 1990, and his Ph.D. in Chemical Engineering from the University of Pittsburgh in 2001. Bill is a member of the American Nuclear Society in addition to AIChE. Bill hopes to aid in membership growth for NED and expects to build synergy in our cooperation with other societies via his contacts in ANS. Bill will advance to the Chair position in 2005.

New Financial Practices for AIChE

NED members should be aware of the new rules for financial accounting for AIChE divisions. Specifically, AIChE is requiring that all division funds be maintained in accounts owned by AIChE national. Of course, disbursements from the accounts are still under the control of the divisions. If you'd like more information on this, please contact NED Secretary-Treasurer Ron Denney or NED Chair Paul d'Entremont.

NED Contacts: 2004 Officers

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- CHAIR: Paul d'Entremont, Westinghouse Savannah River Company / US DOE Savannah River Site, (803) 208-8727
- VICE-CHAIR: William Rhodes, Westinghouse Savannah River Company / US DOE Savannah River Site, (803) 725-4785
- SECRETARY-TREASURER: Ronald Denney, Bechtel BWXT Idaho / US DOE Idaho National Engineering and Environmental Laboratory, (208) 526-3102
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Nominating Committee

- CHAIR: Robert Wham, UT-Battelle / US DOE Oak Ridge National Laboratory, (423) 576-7783
- R.E. WILSON AWARD: Nathan Chipman, Bechtel BWXT Idaho / Idaho National Engineering and Environmental Laboratory, (208) 526-1424

Programming Committee

- CHAIR: Ronald Denney, Bechtel BWXT Idaho / US DOE Idaho National Engineering and Environmental Laboratory, (208) 526-3102

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