NED
NUCLEAR ENGINEERING DIVISION

1993 Marx Issacs Award Recipient

NEWSLETTER

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AIChE Annual Meeting

Indianapolis, November 3 - 8, 2002

AIChE will hold its 2002 Annual Meeting at the Indianapolis Convention Center November 3 through 8. The meeting will include six topical conferences, hundreds of technical sessions, short courses, tutorials, poster sessions, the Student Conference, and the Welcome Reception. Complete information on the meeting and on what to do in Indianapolis is available on the web at http://www.aiche.org/conferences/annual/.

For a number of reasons, the Nuclear Engineering Division will not be conducting any technical sessions at this meeting. However, we will have an Executive Committee meeting, and all NED members are welcome to attend. We need input from all our members to help us work through such challenges as travel restrictions and the shrinking nuclear industry as we try to renew and revitalize NED. We will also present the Robert E. Wilson Award to the 2002 winner, Rowland Felt; see the separate article for more information. NED Chair Ron Denney encourages as many NED members as possible to come to Indianapolis and sit in on other division sessions and also in some of the AIChE business meetings to see what AIChE as a whole and the other divisions are doing.

You can register on-line, by mail, by fax, or by phone. Meeting registration information will soon be available on the web or at 1-800-AIChemE (1-800-242-4363).

WISE Intern

NED is helping to sponsor Wayne Blaylock of Tennessee Tech as a Washington Internships for Students of Engineering (WISE) intern this summer. Wayne has provided information (on page 2) regarding his planned research, which you may find very interesting. If you wish to contact Wayne, you can reach him at e-mail address dwb@tntech.edu.

2002 Wilson Award Goes to Rowland Felt

NED would like to congratulate Rowland Felt, the winner of the Robert E. Wilson Award for 2002. Dr. Felt is receiving the award for his outstanding accomplishments in development of the actinide sciences and in the furtherance of nuclear safety. Among his many accomplishments are development of the Direct Oxide Reduction process for plutonium, two patents, over one hundred publications and presentations, and others too numerous to mention here. He is a leading authority on the various aspects of plutonium processing. Rowland will receive his award at the AIChE meeting in Indianapolis.

Wilson Award Nominations

It's not too early to start thinking about your nominations for the Wilson Award for 2003. The award is presented each year for outstanding chemical engineering contributions to the nuclear industry. We'll soon be seeking nominees for the 2003 award. Please contact Nate Chipman at chipna@inel.gov to begin the process of nominating the worthy candidate you have in mind.

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Wayne Blaylock

Research Outline
2002 Washington Internships for Students of Engineering

Topic: For my WISE paper, I will be researching the proliferation resistance of various proposed nuclear reprocessing techniques and the importance both politically and in the interest of national security.

Background: Under the Carter administration, United States policy essentially stopped all commercial nuclear reprocessing. The primary reason stated for the cancellation of reprocessing activities was the proliferation danger associated with the extraction of weapons grade material from spent nuclear fuel. Following administrations have continued this policy of no nuclear reprocessing. As the Department of Energy sets poised to move into the next era of nuclear power generation with its Generation IV reactors, the question of whether or not to reprocess is once again being posed.

Research Basis: The focus of my WISE paper will not be whether or not United States policy should be to reprocess spent nuclear fuel, but rather to address which methods of reprocessing are most proliferation-resistant and to address the importance of the degree of proliferation resistance offered by the chosen reprocessing technique if the United States returns to a policy of reprocessing.

It is politically important to choose a proliferation-resistant reprocessing method because it was this aspect of reprocessing that was cited as the primary cause for the cessation of commercial nuclear reprocessing under the Carter administration. Also, this is one of the chief reasons cited today for why the United States should not return to a policy of reprocessing spent fuel.

In the interest of national security, it is also important to choose a method of reprocessing that exhibits a high degree of proliferation resistance. Not only does our engagement in nuclear reprocessing create the potential of proliferation of weapons grade nuclear material, but it also poses an international threat. If the United States returns to reprocessing spent fuel, it could potentially open the door for other nations, both nuclear weapons states and not, to adopt a similar policy. If the United States chooses a highly proliferation-resistant method of reprocessing, it provides political leverage in working to ensure other nations do the same. Although the United States' nuclear safeguards program is well developed and secure, the same cannot necessarily be said for other nations who could potentially begin nuclear reprocessing.

The United States will not necessarily be a trailblazer in the nuclear reprocessing realm. Other nations such as Great Britain, France, and Japan have more significant histories than the United States in nuclear reprocessing. However, in applying a great amount of rigor in regards to the proliferation resistance of the chosen method of reprocessing, the United States will be blazing new ground in the security of commercial nuclear reprocessing.

Although there are other proposed methods of nuclear reprocessing, the two methods I have currently been examining are the PUREX process and pyroprocessing (I intend on researching others in detail as well). Although all commercial nuclear reprocessing plants in the world currently use a form of the PUREX process, it appears that pyroprocessing offers a higher degree of proliferation resistance. While in the PUREX process a concentrated plutonium stream and a concentrated uranium stream are recovered, pyroprocessing allows the extraction of unconcentrated plutonium. This is the key proliferation aspect associated with reprocessing: Pure plutonium extraction streams lead to the stockpiling of weapons grade material from non-weapons grade material used in commercial nuclear reactors. I would also like to focus on the overall goals of the Generation IV reactor initiative of reexamining the total fuel cycle and how this fits in with United States nonproliferation goals.

I plan to address briefly the technological differences between these two processes as well as other reprocessing technologies. The primary purpose for the comparison will be to offer a brief background of the techniques as well as to set the stage for comparison and contrast with regards to nuclear nonproliferation.

I plan to use congressional staff interviews as well as industry/special interest group representative interviews to address the policy associated with returning to a nuclear reprocessing program. Primary policy points I plan to address are domestic and international opinion of United

States commercial nuclear reprocessing with a focus on nonproliferation aspects; domestic and international threat of a proliferation-prone method of reprocessing; affected treaties; and the overall importance of proliferation resistance to the success of restarting nuclear reprocessing. Further thought and evaluation will most likely lead to the discovery of more key policy points associated with the proliferation resistance of United States commercial nuclear reprocessing.

NED Is Back on the Web!

NED is active on the World Wide Web again. Check out NED's web page for information on the history and objectives of NED; membership information; the recent white paper that NED prepared on the role of nuclear energy in reducing greenhouse gas emissions; recent NED newsletters; and links to the AIChE web site. You can access the NED web page from the AIChE web page, at http://www.aiche.org/divisions/index.htm (then choose NED), or directly at http://www.ornl.gov/ned/.

Officer Nominations for 2003

NED will be seeking one new Director (to replace Charles Forsberg) and a new Vice Chair for 2003. This is an excellent opportunity to learn more about AIChE and NED and to establish contacts nationwide. If you or any NED member you is interested in serving the Division and your fellow members, please contact current Nominations Chair Keith Hampton at keith.hampton@fluor.com.

Nuclear Engineering Division Planning for Golden Anniversary

NED is looking forward to celebrating its 50th anniversary in 2004. As the very first AIChE division, NED has a rich heritage and a colorful history. If you have historical information to contribute or ideas for our celebration, please contact Keith Hampton at keith.hampton@fluor.com.

Future AIChE Meetings

AIChE national meetings for the next couple of years are listed below for your convenience. For complete information, go to AIChE's home page and click on the Conferences link.

- 2003 Spring National Meeting
  March 30 - April 3
  Ernest N. Morial Convention Center
  New Orleans

- 2003 Annual Meeting
  November 16 - 21
  San Francisco Hilton

- 2004 Spring National Meeting
  April 25 - 29
  Hyatt Regency
  New Orleans

- 2004 Annual Meeting
  November 7 - 12
  Austin Convention Center

The preliminary technical program for the Spring 2003 meeting has been set. Planned NED session topics are listed below. Please contact Luis Canas at luis.canas@srs.gov for more information.

- Recent Advances in Chemical Separation Processes for Tank Waste Treatment
- Advances in Separations and Immobilization of Nuclear Waste in Support of the DOE Environmental Management Program
- Methodologies for the Management and Disposal of Unique Nuclear, Toxic, and Mixed Waste
- Yucca Mountain Repository: Waste Acceptance and Processing Issues
- Novel Hydrogen Generation Processes and Energy Applications
- Mixed Oxide Fuel Fabrication: Operational Experience and Projected Plant at the Savannah River Site (information / poster session)
- Overview of Integrated Safety Management Programs in DOE Chemical Nuclear Facilities (information session)

Meet Your NED Officers

Several elected and appointed NED leadership positions have been filled in recent months. Here's some information on your new officers. For contact information, see the directory below.

Vice-Chair: Luis Canas. Luis is with Westinghouse Savannah River Company. He received his B.S. in chemical engineering from Louisiana State University and his M.S. and Ph.D. from the University of Cincinnati. Luis will progress to NED chair in 2003.

Director: Emory Collins. Emory is completing the term as NED Director ending in 2003. He received his B.S.Ch.E from Auburn University. He is with Oak Ridge National Laboratory, where he specializes in radiochemical separations and isotope production.

Director: Chip McClard. Chip is with WSRC at Savannah River. He will be serving as Director for a three-year term, through 2004.

Secretary-Treasurer: David Houck. Dave is with BBWI at the Idaho National Engineering and Environmental Laboratory, where he's been since 1980. He received his B.S. in ChemE from Oregon State University and his M.S. from the University of Idaho.

Membership Chair: Bob Wham. Bob is at Oak Ridge National Laboratory. He holds a Ph.D. in ChemE and is interested in isotope production both professionally and as an issue for AIChE and NED involvement. Bob was NED Chair in 2000.

NED Contacts

Officers			
Chair	Ron Denney	(208) 526-3102	denney@inel.gov
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Secretary-Treasurer	David Houck	(208) 526-9209	edh@inel.gov
Past Chair	Bob Wham	(865) 576-7783	whamrm@ornl.gov
Directors			
Through 2002	Charles Forsberg	(865) 574-6783	cwf@ornl.gov
Through 2003	Emory Collins	(865) 547-6928	collinsed@ornl.gov
Through 2004	Chip McClard	(803) 952-4612	james.mcclard@srs.gov
NED Committee Chairs			
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	Rowland Felt	(208) 526-8241	feltre@id.doe.gov
AIChE Liaisons and Committee Representatives			
CTOC Liaison	Joe Cramer	(212) 591-7950	josec@aiche.org
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