Division of Nuclear Chemistry and Technology
American Chemical Society

NUCL WWW Home Page – http://www.nucl-acs.org

NEWSLETTER
July 2014

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Topics

FROM THE CHAIR – *Paul Mantica*

The NUCL division is preparing for the upcoming Fall ACS National Meeting, scheduled for August 10-14 in San Francisco. The theme for the San Francisco meeting is "Chemistry and Global Stewardship." NUCL will sponsor 6 symposia over 4.5 days, with a total of 130 oral presentations. The division is also co-sponsoring symposia with I&EC and FLUO, as well as the Nuclear Energy Stewardship Panel organized by the Society Committee on Education's Undergraduate Programs Advisory Board and scheduled for Sunday, August 10 from 9:30 – 10:30 am. The NUCL division will also be represented by Dr. Ken Nash at the SustainMix: Sustainability Across the Society, a symposium organized by the Division of Chemical Education that will run all day Sunday, August 10 and in the morning on Monday, August 11. The NUCL Business Meeting will be held Monday, August 11 starting at 5 pm in the San Francisco Marriott Marquis hotel, immediately followed by the NUCL Social Hour. An additional NUCL activity planned for San Francisco is a Strategic Planning Reconciliation Meeting on Thursday, August 14, 2014. As announced in the last newsletter, the Executive Committee has embarked on a Strategic Planning

exercise, with the goal of updating the NUCL Strategic Plan for 2015-2020. Additional information on the Strategic Plan exercise is included later in this newsletter.

A significant community planning activity is underway. The Nuclear Science Advisory Committee (NSAC) has been charged with producing a new Long Range Plan (LRP) for Nuclear Science. A series of town meetings (details provided later in this newsletter) will be held throughout the fall, with the aim of generating a series of white papers that will be submitted to NSAC and the LRP Writing committee in early 2015. The LRP Writing committee will complete its work by spring 2015, and the final LRP document is due in October 2015. I encourage all NUCL members to participate in this important community activity.

It is sad to report the deaths of two significant contributors to the NUCL division. Lester R. Morss passed away June 14. Lester was Chair of the division in 1999, and served as Secretary from 1990-1992. Lester served many years as the Program Manager for Heavy Element Chemistry in the Department of Energy Office of Science, Office of Basic Energy Science. He was a well-respected actinide chemist, and a long-time advocate for the Nuclear and Radiochemistry Summer Schools program. Heino Nitsche passed away July 15. Heino was Chair of the division in 2007, and led the development of the first NUCL Strategic Plan. He also organized several technical symposia at National ACS meetings. He was on the Chemistry Faculty at UC Berkeley, and was founding director of the Glenn T. Seaborg Center at LBNL. Heino recently received the Hevesy Medal Award in recognition of his continued leadership in heavy element nuclear and radiochemistry.

Lastly, the website committee continues to add content to the new NUCL website, http://www.nucl-acs.org. Suggestions should be sent to Chris Klug (cklug@gru.edu), who is serving as the NUCL webmaster.

Strategic Plan

The NUCL Strategic Planning exercise is underway. The division mission and vision statement have been shared already in the last newsletter:

Mission – The Division serves to advance the understanding of nuclear chemistry and radiochemistry and their practical applications by serving the diverse communities involved in nuclear science and related technologies.

Vision – As the preeminent organization for professionals in the fields of nuclear chemistry, radiochemistry, and related technologies, the Division will provide enhanced opportunities for education, networking, and outreach, while maintaining its excellence in diverse programming.

NUCL members were asked to provide feedback on the suggested goals for the division over the period 2015-2020. The finalize goal statements are provided below:

Goal 1 – Develop the next generation of nuclear chemists and radiochemists to meet national workforce needs in both basic and applied nuclear science and related technologies, with focus on education, hands-on training, and mentoring of young scientists (e.g., undergraduates, graduate students, and young professionals). Team Leads: Alice Murray and Graham Peaslee; Team Members: Jenifer Braley, Krista Meierbachtol, Dave Robertson, Tom Wall, Sherry Yennello.

Goal 2 – Offer networking and professional growth opportunities for members. Recruit, engage, and recognize nuclear chemists and radiochemists working in interdisciplinary fields. Actively pursue and publicize the professional achievements of members at the local, regional, divisional, and national levels. Team Lead: Dave Hobart; Team Members: John Auxier, Paul Mantica, Dawn Shaughnessy, Chris Whiting, Steve Yates.

Goal 3 – Develop and facilitate events and communication tools that enhance nuclear chemistry and radiochemistry outreach, provide expert information on historical achievements and recent advances, and emphasize the value and importance of practical applications of nuclear science in all aspects of society. Team Lead: Luther McDonald; Team Members: Paul Benny, Zach Kohley, Chris Klug, Suzy Lapi, Donivan Porterfield, Nathalie Wall.

The Goal Teams will assemble a list of activities with completion criteria for each of the goals. These activities will be reviewed at the Strategic Plan Reconciliation Meeting to be held on the last day (August 14, 2014) of the San Francisco meeting. If you would like to contribute to the Strategic Planning exercise, please contact Paul Mantica (mantica@msu.edu).

NSAC Updates

The Nuclear Science Advisory Committee (NSAC) met twice in the past 4 months. The first meeting was held in Bethesda, MD April 24-25, 2014. NSAC reviewed subcommittee reports on "NNSA Development of Mo-99 Domestic Supply" and "Neutrinoless Double Beta Decay". The committee also received three new charges: "Assessment of Workforce Development Needs" "Isotope Research and Production Opportunities and Priorities", and "Nuclear Physics Research Opporunities and Priorities Long Range Plan". Paul Mantica is representing the NUCL division on NSAC in 2014 and attended the meeting. The second meeting was held in Rockville, MD on Monday, June 30. At this meeting NSAC reviewed the subcommittee report on "Assessment of Workforce Development Needs". The committee also heard a summary of the Particle Physics Project Prioritization Panel (P5) Report and an update on the Office of Nuclear Physics Isotope Program. Paul Mantica is representing the NUCL division on NSAC in 2014 and attended the meeting. Dave Robertson, who is serving as National Director for the Nuclear and Radiochemistry Summer Schools, also attended the meeting. The subcommittee report on Workforce Development spoke well of the division-sponsored Summer Schools, and the draft language encourages DOE Office of Science offices to increase support for training efforts in areas with critical workforce development needs. The final report should be available on the NSAC homepage (science.energy.gov/np/nsac/) by the end of July 2014.

NSAC Long Range Plan Town Meetings

As noted above, NSAC received a charge on April 23, 2014 to develop the next Long Range Plan (LRP) outlining the Research Opportunities and Priorities over the next decade for the field of Nuclear Science. The LRP is due in October 2015, and will be developed with significant input from the community. Four town meetings are scheduled to facilitate the contribution process:

- Education and Innovation [Graham Peaslee, Michael Thoennessen], August 6-8, 2014 at Michigan State University
meetings.nscl.msu.edu/Education-Innovation-2014

- Nuclear Structure [Charlotte Elster, Mark Riley] and Nuclear Astrophysics [Hendrik Schatz, Michael Wiescher], Aug. 21-23, 2014 at Texas A&M University
www.lecmeeting.org/

- QCD: Heavy Ions [Paul Sorenson, Ulrich Heinz] and Hadrons [Haiyan Gao, Craig Roberts], September 13-15, 2014 at Temple University
phys.cst.temple.edu/qcd

- Fundamental Symmetries, Neutrons, Neutrinos, and Astrophysics [Michael Ramsey-Musolf, Hamish Robertson],

September 28-29, 2015, Crowne Plaza near Chicago O'Hare Airport
NUCL members are strongly encouraged to participate in the LRP town meetings. Updates on the LRP process will be provided on the American Physical Society's Division of Nuclear Physics website: www.aps.org/units/dnp/

SERMACS 2014
The 66th Southeastern Regional Meeting of the ACS will be October 16-19, 2014 in Nashville, TN. There will be an Invited Session entitled "Honoring W. Frank Kinard – Professor, Nuclear Chemist, Mentor, Friend" on Saturday morning, October 18. The session is being organized by Wendy Cory, College of Charleston, with partial support provided by an Innovative Project Grant (IPG) from the Division Activities Committee of the ACS.

Volunteers Needed
The division has multiple service opportunities for members. These opportunities include:
- participating on the "Goal Teams" for the Strategic Planning Exercise
- serving on an ad-hoc Education and Membership committees
- supporting division communication activities: newsletter and website

If you are interested in learning more about ACS governance, playing an active role in the division is an excellent way to expand your network and raise awareness on issues important to NUCL members. Please contact Paul Mantica (mantica@msu.edu) to volunteer.

AWARD NOMINATIONS COMMITTEE OF NUCL – *Steve Yates*

The Awards Nominations Committee of the Division was formed to encourage and facilitate nominations for national ACS awards. Please nominate a colleague for one of the awards given below or another ACS award (http://www.acs.org/content/acs/en/funding-and-awards/awards/national.html).

Glenn T. Seaborg Award for Nuclear Chemistry (http://www.acs.org/content/acs/en/funding-and-awards/awards/national/bytopic/glenn-t-seaborg-award-for-nuclear-chemistry.html) -- Nominations are initiated by individuals and the procedures are given on the ACS website. The next deadline is **November 1, 2014.**

ACS Fellows (http://www.acs.org/content/acs/en/funding-and-awards/fellows.html) -- Nominations can be initiated by individuals; however, the Division can nominate up to four individuals as ACS Fellows annually. Nominations for the 2015 class of Fellows are scheduled to open February 1, 2015 and close **April 1, 2015.**

W. Frank Kinard Distinguished Service Award, established in 2014, recognizes NUCL members for outstanding service to the division and the field of nuclear science -- Nomination procedures are given on the NUCL website (http://www.nucl-acs.org/?page_id=611) and the next deadline is **July 1, 2015.**

Suggestions and questions should be addressed to Steve Yates (yates@uky.edu; 859-257-4005).

UPCOMING PROGRAMMING- *Paul Mantica, Dave Hobart, Jenifer Braley*

The 248th ACS National Meeting & Exposition in San Francisco should be a lively event with scientific contributions from a variety of nuclear related fields. We thank our organizers for their efforts and look forward to the presentations, the business meeting and, most importantly, the social hour! All activities for the NUCL division will be hosted in the Marriot Marquis in downtown San Francisco.

The Denver Call for Papers was due July 7th and should be appearing on the ACS website and in your C&E News in the August 25th edition. Abstract submission will be done using the new abstract management system – MAPS. Abstract submission will open during the San Francisco meeting. While the MAPS system has been rumored to be a vast improvement over PACS, change does bring some growing pains. Please don't hesitate if you have questions during the submission process. I (Jen) will do my best to help!

If you have interest in programming further out, ample room exists for the 2015 Fall (Boston) meetings or 2016 Spring (San Diego). Thank you to all current and future organizers for their programming contributions. Please contact either Dave Hobart (dhobart15@gmail.com) or Jenifer Braley (jbraley@mines.edu) with your programming suggestions.

Fall 2014 – San Francisco, CA – *Chemistry for a Sustainable World*

– Comprehensive Test Ban Treaty Verification (Organizers: Sean Liddick, Howard Hall, Steven Biegalski)
– High-Level Waste Storage (Organizers: Nathalie Wall, Mark Boggs))
– Nuclear Fusion, from NIF to the Stars (Organizers: Mark Stoyer, Lee Bernstein)
– Environmental Radiochemistry Symposium (Organizers: Don Reed, Ralf Sudowe, Brian Powell, Mavrik Zavarin)
– Young Investigators (Organizers: Cody Folden, Jeff Terry, Alena Paulenova)
– A Symposium in Memory of Frank Kinard: A Lifetime of Contributions to Science, Summer Schools and our NUCL Division Family (Organizer: Paul Mantica)
– Radiopharmaceutical Chemistry (co-sponsored with FLUO and MEDI) – Alan Packard (Harvard, alan.packard@childrens.harvard.edu)

– Rare Earth Separation Chemistry (co-sponsored with I&EC) (Organizers: Dale Ensor, Peter Smith)

Please join us in San Francisco for the Business meeting and the social hour.
The NUCL Business Meeting will be held on Monday, August 11, 2014 from 5-6 pm, in room PACIFIC ROOM I

The NUCL Social Hour will be held on Monday, August 11, 2014 from 6-8 pm, in room PACIFIC ROOM J

See you there!

Spring 2015 – Denver, CO – March 22-26, 2015 - *Chemical Resources: Extraction, Refining and Conservation*

– Seaborg Award Symposium (Organizer: TBD)
– 50th Anniversary of the NUCL Division (Organizers: Dave Hobart, LANL, dhobart15@gmail.com; David Shuh, LBNL, dkshuh@lbl.gov; Dawn Shaughnessy, LLNL, shaughnessy2@llnl.gov; Jenifer Braley, CSM, jbraley@mines.edu)
– Convergence of Theory and Experiment in Heavy Element Chemistry (Organizers: Al Sattelberger, ANL, asattelberger@anl.gov; David Shuh, LBNL, dkshuh@lbl.gov;

Lynda Soderholm, ANL, soderholm@anl.gov; David Clark, LANL, dlclark@lanl.gov)
- Nuclear Forensics (Organizers: Robert Rundberg, LANL, rundberg@lanl.gov; Amanda Klingensmith)

Fall 2015 – Boston, MA – August 16-20, 2015 - *A History of Innovation: From Discovery to Application*
- General Topics in Nuclear & Radiochemistry (Jenifer Braley)
- Analytical Chemistry in Nuclear Technology (Organizers: Dave Hobart, LANL, dhobart15@gmail.com; Charles Coleman, SRNL, charles02.coleman@srnl.doe.gov)

Spring 2016 – San Diego, CA – March 13-17, 2015
- Young Investigators in Nuclear & Radiochemistry (Organizers TBD)
- General Topics in Nuclear & Radiochemistry (Organizer TBD)

If you are interested in organizing a symposium for 2015, please contact Dave Hobart, 2015 NUCL Chair (dhobart15@gmail.com), or Jenifer Braley, NUCL Program Chair (jbraley@mines.edu).

Several other concepts in development

Radiochemistry Infrastructure – cooperative with the Health Physics Society

Archaeometry (contact Dave Robertson)

PACIFICHEM 2015 – *Paul Mantica*

The 2015 International Chemical Congress of Pacific Basin Societies, known as Pacifichem 2015, will take place in Honolulu, Hawaii, USA, December 15-20, 2015. The final technical program is now available, and includes the following symposia that may be of interest to NUCL members:

- Experimental and Theoretical Actinide Chemistry: From Fundamental Systems to Practical Applications [#42, Inorganic] (Organizers: John Gibson, Georg Schreckenbach, Tsuyoshi Yaita, Jun Li, and Ping Yang)
- The Expanding Periodic Table: New Discoveries and Chemistry of the Heaviest Elements [#234, Inorganic] (Organizers: Heino Nitsche, Yuichiro Nagame, Zhi Qin, Peter Schwerdtfeger, Christoph Duellmann, Andreas Tuerler)
- Nuclear Probes in Nanoscale Characterization [#254, Inorganic] (Organizers: Masashi Takahashi, Anita Hill, Virender Sharma, Junhu Wang, Kiyoshi Nomura, Yasuhiro Yamada)
- Isotope Production – Providing Important Materials for Research and Applications [#363, Inorganic] (Organizers: Dennis Phillips, Katherine Gagnon, Yuichi Hatsukawa)
- Computational Modeling of d- and f-Block Chemistry: Challenges and Opportunities [#130, Physical, Theoretical & Computational] (Organizers: Angela Wilson, Peter Schwerdtfeger, Kwang S. Kim, Zhenyang Lin, Tom Cundari)
- Science with Beams of Radioactive Isotopes [#340, Physical, Theoretical & Computational] (Organizers: Sherry Yennello, Krzysztof Starosta, Yulinag Zhao, Hiromitso Haba)
-
- Fukushima and Radiological Contaminated Environments World-wide: The Important Role of Environmental Chemistry and Radiochemistry in Remediation and Restoration [#374, Physical, Theoretical & Computational] (Organizers: Takayuki Sasaki, Heino Nitsche, Chunli Liu, Zenko Yoshida, Stepan Kalmykov)

- Application of Luminescent Materials for Radiation Detection [#442, Materials & Nanoscience] (Organizers: Keisuke Asai, Jian Zhang, Takayuki Yanagida, Safa Kasap)
- Chemistry for Development of Theranostic Radiopharmaceuticals [#11, Bench to Bedside: Chemistry of Health Care] (Organizers: Scott Wilbur, Michael Adam, Paul Donnelly, Yasushi Arano, Jae Min Jeong, Xianzhong Zhang)
- Chemistry of Molecular Imaging [#215, Bench to Beside: Chemistry of Health Care] (Organizers: Henry VanBrocklin, Gilles Tamagnan, Yasuhisa Fujibayashi, Len Luyt, Andrew Katsifis, Yearn Choe)
- Recent Advances in Microfluidic Systems for Radiochemistry [#416, Bench to Bedside: Chemistry of Health Care] (Organizers: Giancarlo Pascalli, Yuji Kuge, Robert Michael van Dam)

For complete information about the Pacifichem Program please visit:

http://www.pacifichem.org

SUMMER SCHOOL – *Dave Robertson*

Questions, comments, or concerns regarding the summer school program should be directed to:

Prof. J. David Robertson
National Director, ACS Nuclear and Radiochemistry Summer Schools
University of Missouri
Columbia, MO 65211-7600
Phone 573-882-2240
robertsonjo@missouri.edu

AMERICAN HERITAGE FOUNDATION – *from Alan Ehrlich and Cindy Kelly*

Chemistry and the Manhattan Project

For decades, the public has had little appreciation of the important role that chemistry played in the Manhattan Project. Just days after the atomic bombs were dropped on Japan in August 1945, the U.S. government issued an official history of the project. Commonly known as the Smyth Report, it focuses on the physics of the bomb and deliberately omits details about the chemistry, engineering, metallurgy and other aspects considered top-secret.

But now it can be told. The Atomic Heritage Foundation (AHF), a nonprofit organization founded in 2002 in Washington, DC, is dedicated to the preservation and interpretation of all aspects of the Manhattan Project and its legacy. The Foundation's goal is to provide the public a better understanding of the interdisciplinary and innovative nature of the Manhattan Project and its legacy for science, technology, politics, culture and society in the 21st century.

One of the Foundation's priorities is to establish a Manhattan Project National Historical Park. In 2004, Congress directed the National Park Service to study the feasibility of the park. Ten years later, Congress is very close to creating a park at three sites: Hanford, WA, Los Alamos, NM and Oak Ridge, TN. In May 2014, the House passed the Manhattan Project National Historical Park Act as part of the "must pass" National Defense Authorization Act. With strong bipartisan and bicameral support, we are cautiously optimistic that legislation was pass in 2014.

When future generations look back on the 20th century, few events will rival the harnessing of nuclear energy as a turning point in world history. Having some

authentic properties where the Manhattan Project scientists and engineers worked is an essential part of the park. As Richard Rhodes, a member of AHF's Board of Directors, has said, "When we lose parts of our physical past, we lose parts of our common social past as well."

AHF spearheaded the successful campaign to preserve and restore the "V-Site" at Los Alamos. In humble garage-like buildings, the plutonium-based bomb was developed. A second property at Los Alamos being restored is the "Gun Site," where the uranium-based bomb was developed.

Over the last decade, AHF has worked hard to preserve the B Reactor at Hanford and save a portion of the K-25 gaseous diffusion plant at Oak Ridge, TN. While the B Reactor attracts tens of thousands annually as a Manhattan Project icon, unfortunately the K-25 plant was completely demolished this year despite significant support to save a small portion.

For over a decade, AHF has been recording oral histories of Manhattan Project veterans. In November 2012, AHF launched the website, "Voices of the Manhattan Project," (www.manhattanprojectvoices.org) that now has over 170 interviews. The "Voices" collection has a great diversity of participants including chemists Lawrence Bartell, Bert Tolbert, William Spindel and Lilli Hornig.

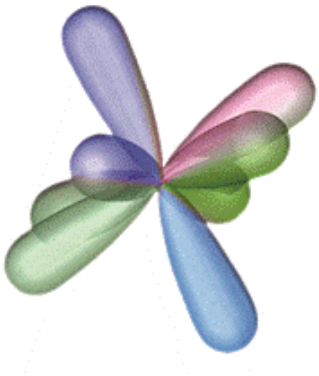
Soon, AHF will be adding another 200 interviews that have been in the archives of Boston University and the University of Washington. Conducted in the 1960s and 1980s, the interviews are with many of the Manhattan Project leaders including J. Robert Oppenheimer, General Leslie R. Groves, James B. Conant, Glenn Seaborg, Eugene Wigner, Edward Teller, and other luminaries.

In April 2014, AHF created a powerful new interpretive tool called "Ranger in Your Pocket," based on a "Bring Your Own Device" strategy. This tool empowers visitors to use their personal smartphones or tablets to design their own tour experience. The first tour has some 50 entries on the B Reactor, the plutonium production reactor at Hanford, WA (www.rangerinyourpocket.org).

In addition, AHF has published a best-selling anthology, The Manhattan Project (Black Dog & Leventhal, 2007), selected as the Kindle Book of the Day in June 2012. AHF has also produced five documentary films and a series of colorful guides to the Manhattan Project in New Mexico, Tennessee, Washington State, and Manhattan.

The Manhattan Project produced a myriad of ingenious devices with 5,600 registered in its patent files. This surge of innovation gave birth to scientific computing, nuclear science, nuclear reactors, health physics, human genome research and many other fields. AHF's next project will focus on this innovation and "connect the dots" between the Manhattan Project and cutting-edge work today.

For more information, please visit AHF's website (www.atomicheritage.org). The website features an in-depth atomic timeline, ever-growing database of Manhattan Project veterans, educational resources, and much more. Working with the American Chemical Society, AHF hopes to ensure that the important role of chemistry in the Manhattan Project and our lives today is told.



Plutonium Futures—The Science Conference 2014 will be held at the Renaissance Hotel in Las Vegas, Nevada September 7-12, 2014. It will be the eighth conference in the series, which was initiated by Los Alamos National Laboratory in 1997. Previous conferences have been held in Santa Fe, New Mexico, in 1997 and 2000; Albuquerque, New Mexico, in 2003; Asilomar, California, in 2006; Dijon, France, in 2008; Keystone, Colorado, in 2010; and Cambridge, United Kingdom, in 2012. The 2014 conference is co-sponsored by Lawrence Livermore and Los Alamos National Laboratories and the American Nuclear Society (ANS).

The Plutonium Futures conferences provide an international forum for the discussion of current research on the physical, chemical, and mechanical properties of plutonium and other actinides. By bringing people of diverse disciplines together, the conference aims to enhance the dialogue among scientists and engineers on the fundamental properties of plutonium and their technological consequences. The conference will include discussions of condensed matter physics, materials science, metallurgy, surface science, corrosion, colloids, actinide chemistry, detection and speciation analysis, environmental science, fuel-cycle issues, and advanced nuclear fuels. A tutorial session will be held on the opening Sunday afternoon.

Kerri Blobaum and Scott McCall are the general and program chairs, respectively. Information on registration, call for papers, and lodging will be available through the ANS webpage. Questions or requests to be added to the conference mailing list should be sent to Kerri Blobaum (blobaum1@llnl.gov) or Scott McCall (mccall10@llnl.gov).

Prepared by LLNL under Contract DE-AC52-07NA27344.

ISRS 2015

May 26-31, 2015
University of Missouri
Columbia, Missouri

www.isrs2015.org

The 21st International Symposium on Radiopharmaceutical Sciences

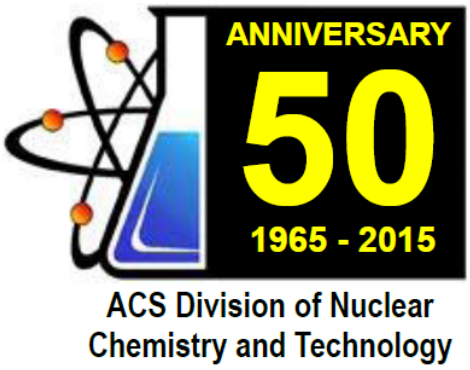
University of Missouri Research Reactor (MURR®) Center

Online Abstract Submission and Registration opens in October 2014. Abstract Deadline is December 15, 2014.

Sponsor/exhibitor opportunities now available, consult www.isrs2015.org/Sponsors or contact muconf3@missouri.edu or 011-573-882-9554, toll-free in the U.S. at 866-682-6663.

Francis Quadrangle and Jesse Hall

Symposium Celebrating the 50th Anniversary of the ACS Division of Nuclear Chemistry and Technology



The Division of Nuclear Chemistry and Technology (NUCL) was first established in 1957 as a subdivision of the Division of Industrial and Engineering Chemistry. In 1965 the ACS approved lifting the probationary status and created the new division. The NUCL Division held its first symposium, "The Production Technology of Neptunium-237 and Plutonium-238" at a meeting in Denver, Colorado. It is fitting that we celebrate the 50th Anniversary of the Division at the 249th ACS National Meeting and Exposition in Denver, CO, March 22-26, 2015.

Plans are currently underway for the 50th Anniversary of the NUCL Division Symposium and we are looking for division members to volunteer to help organize the symposium. We are also soliciting ideas and historic and contemporary photographs and motion pictures of people and places from the last fifty years. Please send your ideas and photos, etc. to the current organizers of the Symposium listed below. The 50th Anniversary Symposium will "Honor the Past, Celebrate the Present and Shape the Future" of the Division and the discipline. We look forward to a memorable and inspiring symposium.

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