Division of Nuclear Chemistry and Technology
American Chemical Society

DNCT WWW Home Page – http://www.cofc.edu/~nuclear

NEWSLETTER
APRIL 2006

Newsletter Editor: Lætitia Delmau
Email: dnctnews-letter@yahoo.com

Topics

FROM THE CHAIR – J. David Robertson

My thanks to all of those who organized and participated in the symposia at the 231st National ACS meeting in Atlanta. We had a full week and the sessions were very well attended. The Archaeological Chemistry symposium attracted many individuals from outside of our division and the papers presented will be published in an ACS Symposium Series volume entitled "Archaeological Chemistry: Analytical Technique and Archaeological Interpretation." The presentations in the "21st Century Radiochemistry Opportunities: A Symposium Highlighting Nuclear Science Workforce Needs" symposium provided an excellent overview of many of the exciting research programs in nuclear and radiochemistry today and many of the presenters have given us permission to make these excellent summaries available on the Division website. The diversity and excitement in the field was also reflected in the outstanding presentations from the graduate students participating in the "Meeting the diverse needs of the 21st century nuclear science workforce: A symposium by graduate student researchers in nuclear chemistry."

And finally, the participants in the "Contemporary Frontiers in Nuclear Structure" symposium enjoyed both the scientific exchange and opportunity to honor and roast the 2006 Glenn T. Seaborg award winner Steve Yates.

As noted in the last newsletter, the proposed amendments to the Bylaws for the Division of Nuclear Chemistry and Technology were presented and voted on at the Business Meeting of the Division. The amendments were approved with a unanimous vote. I would like to take this opportunity to thank our previous Chair, David Morrissey, for his leadership in working with the society on drafting the amendments to bring our bylaws in line with the current policies of the national organization.

And finally, a reminder that the deadline for submission of abstracts for the 232nd National ACS meeting that will be held in San Francisco from September 10-14 is April 26. Abstracts should be submitted at http://oasys.acs.org/oasys.htm

ACS FALL MEETING- San Francisco

San Francisco, CA, Sept. 10 – 14, 2006

f Element Separations
sponsored by I&EC, co-sponsored by DNCT
(see attached announcement)
Ken Nash (knash@wsu.edu), Dale Ensor and Bill Crooks.

30 years of Projectile Fragmentation
David Morrissey (morrissey@nscl.msu.edu)
(see attached announcement

Analytical Chemistry in Nuclear Technology
Charles Coleman, SRNL, Aiken, SC (charles02.coleman@srnl.doe.gov), Dave Hobart (dhobart@lanl.gov) and David Hobbs (David.Hobbs@srnl.doe.gov)
(see attached announcement

Investing in the Future: Radiochemistry Education Award Program

Michael G. Schmidt, Office of Special Programs, Medical University of South Carolina, schmidtm@musc.edu

Radioisotopes for Microbatteries and MEMS

Amy Duwel, Charles Stark Draper Laboratory, Inc., 555 Wilson Boulevard, Suite 501, Arlington, VA 22209, ADuwel@draper.com

Chemistry of Imaging Agents

Silvia Jurisson, University of Missouri, 601 South College Avenue, Columbia, MO 65211, JurissonS@missouri.edu
Martin W. Brechbiel,, NIH
martinwb@mail.nih.gov

COUNCILORS' REPORT- Joe Peterson
Councilors: Joseph R. Peterson and Elliot S. Pierce (Emeritus)
Alternate Councilor: Jeff Bryan

The ACS Council in Atlanta chose the following two candidates for 2007 President-Elect: Bruce E. Bursten (University of Tennessee, Knoxville) and Bassam Z. Shakhashiri (University of Wisconsin, Madison). There was mention also that two petition candidates might be included, should they submit their paperwork by the July deadline.

Following usual practice, Council heard reports from all the officers and then from the elected committees, standing

committees, and a few of the other committees. The Committee on Committees (ConC) recommended the continuation of the Admissions Committee and the Committee on Professional Training as the result of their standard review process. Council voted in favor of their recommendations. The Society ended 2005 with a net contribution from operations of $11.6 million, which was $9.1 million favorable to the approved budget. The favorable variance was primarily attributable to higher-than-budgeted print and electronic information services revenue and investment income, as well as expense savings from staff vacancies and reductions in information technology spending.

Part of the Committee on Budget and Finance's report included Council's voting on the proposed 2007 membership dues of $132.00, based on the 3.95% change in the CPI, and up from the 2006 dues of $127.00. Council accepted the fully escalated dues proposal. Also 2007 will be the last year of the four-year program to assess a dues supplement to pay for the increased funding to divisions and local sections. The ACS Board voted to reduce the 2007 amount from the previous expectation of $8.00 to $4.00, so that total dues for 2007 now stands at $136.00, up from 2006's total of $132.00.

The special discussion item for the Council meeting was based on the question: Should the requirements for ACS membership be made less restrictive, more restrictive, or stay the same? Councilors will have had the opportunity to respond in advance to a six-question survey concerning membership issues, so these results were presented to stimulate discussion on this important issue.

Your Councilor, who serves as Chair of the Committee on Membership Affairs, reported that ACS closed 2005 with 158,422 members, reversing a three-year downward trend in Society membership. The membership retention number remained stable at 92.4%. The Governance Review Task Force (on which your Councilor also served, but not on the subgroup dealing with membership issues) submitted a number of suggestions for recommended changes in the ACS membership requirements. There appears to be considerable support for making the ACS more welcoming to our Student Affiliates, international scientists, and those multidisciplinary scientists who have received considerable training in, or are routinely using, chemistry or chemical engineering in their careers.

Dr. James D. Burke, who began a new term as Chair of the Board of Directors this past January announced that he will step down for personal reasons at the end of this calendar year. Thus, three of the six candidates for Directors-at-Large for a 2007-2009 term will be elected for service, with the one with the third highest vote total filling the remaining two-year term of Dr. Burke.

The Atlanta meeting will meet or exceed its expected attendance, as over 12,500 registrants were counted by early Wednesday morning. The fall meeting will take place in September in San Francisco, a venue that already holds the ACS national meeting attendance record.

Joe serves also as a member of the ACS Insurance Trust Board and is Chair of the Editorial Advisory Board of CHEMISTRY. His service on the Governance Review Task Force will continue through this year as well. Councilor Emeritus Elliot Pierce reports that he is available for limited tasks in the DC area and confirms his continuing heartfelt enthusiasm for the division.

NOMINATE YOUR STUDENTS! – from J. David Robertson

The Charles D. Coryell Award honors undergraduate students who have completed research projects in nuclear or nuclear-related areas. Each year, up to two students

are selected to receive awards of $500. Contributions are judged on the basis of ingenuity, novelty, and potential usefulness. To be eligible, a student must have been an undergraduate at some time during the 12-month period prior to the deadline date for submission of applications for the award. The student may be sponsored by a faculty member at the home institution or by a research director at another institution where the student performed the work.
Nominations should consist of a letter written by the person who directed the work and the student's written report. The complete nomination should be no longer than 20 pages.

Submit nominations to:
Professor Graham F. Peaslee
Chemistry Department
Hope College
Holland, MI 49423
(peaslee@hope.edu)

The deadline for submissions is June 2, 2006.

SUMMER SCHOOL

From Ken Nash and Paul Mantica:

Outstanding Students from the 2005 Summer Schools

The outstanding students from the 2005 Summer Schools were Robin Johnson (BNL Summer School) from Illinois Wesleyan University and Brooke Gardner (SJSU Summer School) from Middlebury College, in Vermont. Robin attended the Atlanta ACS Meeting and was introduced at the Business Meeting. Brooke was unable to attend because of competing obligations.

2006 Summer School

For the 2006 Nuclear Chemistry Summer School program, we received 76 total (67 completed) applications as of February 1, 2006. Of these applicants, 45 were male (53%), 39 were female (46%). Demographic features of the applicant pool were not seriously considered in the selection procedure, but where appropriate preference was given to applicants from smaller institutions at which limited opportunities are available for the study of nuclear and radiochemistry. Completed applications were received from students in 21 different states, with the largest numbers of applicants coming from Illinois, Missouri, California, Pennsylvania and New York. Almost half of the applications were received from about 10 Universities and Colleges. The selected Participants for the 2006 Summer Schools are:

Brookhaven National Laboratory
Carolyn Bauer, SUNY College at Oneonta, NY
Daniel Cast, Augustana College, IL
Krista Cruse, Gustavus Adolphus University, MN
Sarah Dekat, University of North Florida, FL
Daniel Deschepper , Northern Illinois University, IL
Tiffany Emmer, Carroll College, WI
John Freiderich, Minnesota State Univ., Mankato, MN
Noah Grant, UC Berkeley, CA
Ta-Chung Ong, Colby College, ME
Stephanie Owens, Sewanee University of the South, TN
Tashi Parsons-Moss, Mills College, CA
Allison Spencer, Whitman College, WA

San Jose State University
Maria Angelella, West Chester University, PA
Benjamin Caes, Augustana College, IL
Nathaniel Fulton, Northern Illinois University, IL
Matthew Goldey, Butler University, IN
Rebecca Hanania ,Truman State University, MO
Stephanie Holbrook, Tennessee Tech University, TN
Brooke Kraft, College of St. Benedict, MN

Rodger Mitchell, Westminster College, UT
Pawan Rastogi, Columbia College, NY
Danielle Stacy ,Truman State University, MO
William Talkington, Austin Peay State University, TN
Esther Tseng , New York University , NY

The alternates are Josefina Maldonado (University of Texas at El Paso) and Veronica Wylie (Loyola Marymount University, CA)

The BNL Summer School consists of 2 sophomores, 6 juniors, 4 seniors. The SJSU Summer School includes 1 sophomore, 9 juniors, 2 seniors. There are 15 Chemistry or Biochemistry majors, 3 Chemistry/Physics double majors, 1 Chemical Engineering major, 1 Physics major, and one each Chemistry majors with minors in Music Performance, Spanish, and Secondary Education

Summer Schools Renewal Proposal Status

Paul Mantica (national director-designee), Rich Ferrieri (BNL site director), Herb Silber (SJSU site director), and Leonard Mausner (DNCT Treasurer) visited the DOE Headquarters in Germantown, MD on January 25, 2006 to discuss the upcoming grant application process for the National Nuclear and Radiochemistry Summer Schools. The Summer Schools are funded by the department of energy primarily through the Office of Basic Energy Sciences (BES), with additional contribution (to cover student stipends) from the Office of Biological and Environmental Research (BER). The summer school delegation met with Dr. Lester Morss, Program Manager for Heavy Element Chemistry within BES and Program Officer for the Summer School grant, as well as Dr. Michael Kuperberg from BER, Dr. Gene Henry from the Office of Nuclear Physics, and Dr. Peter Faletra, Office of Workforce Development for Teachers and Scientists. The goal was to inform DOE of our intention to request renewal of the Summer Schools grant, advertise the success of the program, and discuss possible support scenarios to ensure continued success of the program. Overall, the interactions were very positive, and we have built a solid footing to proceed with the renewal proposal. Our program officer has requested that we submit a pre-application this spring, which should be completed by April 15. The full renewal proposal is due at DOE headquarters by August 1, 2006. Any division member wishing to provide input into the renewal process is welcome to contact Paul Mantica by email mantica@msu.edu or phone 517-333-6456.

FROM THE CHAIR-ELECT- Heino Nitsche

Pacifichem 2005

DNCT was with five symposia well represented at Pacifichem 2005 that was held in Honolulu, Hawaii, from December 15-20, 2005. The symposium "Frontiers in Nuclear Chemistry in the Heaviest Elements" was co-organized by Yuichiro Nagame (JAEA), Yong Hee Chung (Hallym University, Korea), and Heino Nitsche (UCB). With the exception of Russian participation, all the leaders in the field of transactinide chemistry and physics were present. The 35 to 50 participants had to struggle during the day session with a tiny ACS-assigned room that was essentially unfit to accommodate any kind of symposium (some participants referred to it as the "broom closet"). Unfortunately, many interested listeners had to leave the very interesting presentations because no standing room was available. The presentations covered theoretical aspects of heavy element syntheses, gas phase and liquid phase chemistry of elements 104 (Rf) through 108 (Hs), and post production separators for chemistry studies, to name only a few of the topics. One of the many exciting highlights

presented at the symposium was the report of a second decay chain of element 278113 in the cold fusion reaction of a 70Zn beam on a 209Bi target by the Japanese Group at RIKEN, thus confirming the existence of this element.
The symposium "Actinides and the Environment: A Paradigm for Interdisciplinary Research," co-organized by Heino Nitsche (UCB), Zenko Yoshida (JAEA), Won-ho Kim (KAERI), and A. J. Francis (BNL), was well attended. It had 23 oral and 12 poster presentations covering actinide soil, mineral, and microbial interactions, biogeochemistry, surface chemistry, immobilization processes, and bacterial and humic acid complexation modeling as well as surface complexation modeling,

Future ACS meetings

ACS is making strong efforts to incorporate "Thematic Programming" into the annual national meetings. Thematic programming focuses on one or more specific themes that will be covered by many or at least several ACS divisions. The purpose of cross-divisional programming on themes of scientific and societal importance is to potentially increase the visibility of ACS and chemistry as a discipline by attracting the attention of the broader public and press, and to increase the scientific overlap and exploration of ideas between the ACS divisions. Furthermore, other scientific organizations/societies and experts who are not directly related to chemistry could possibly be involved. The possibilities for programming on the cutting edge of science with themes of important interest to our society appear to be very large. The Divisional activities committee (DAC) plans to provide publicity and location as well as financial support, especially for renown speakers from abroad. DAC is currently working on solutions for removing some of the traditional barriers to enhance programming collaborations between the divisions. It is planned to coordinate programmatic programming with the Presidential theme of the each National Meeting.

The ACS-selected themes for the Chicago Meeting in Spring 2007 are:

1) Chemistry for a Sustainable Energy Future
2) Chemistry for a Future Water Supply
3) Chemistry for a Sustainable Future Food Supply

Theme 1) is ideally suited for programming from our Division. We are planning a series of symposia covering the closed nuclear fuel cycle, including the following topics: 1) "Nuclear Fuels – Science, Development and Technology;" 2) "Modern Nuclear Reactors - Improvements of Existing Technology and Generation IV Developments;" 3) "Spent Nuclear Fuel Reprocessing - Future, Present, and Past National and International Experiences;" 4) "Nuclear Transmutation- A Solution for Short-Lived Waste?" 5) "Nuclear Waste Forms – Current Solutions and Future Challenges;" 6) "Understanding Radionuclide Transport in the Environment – A Comprehensive Approach." A possible DNCT contribution to theme 3) could be for example "Food Irradiation- Long-term Experience and Future Applications. We would like to emphasize that the symposia titles are working titles, and are kindly asking for input and volunteers to organize these and other symposia that you may envision during 2007. We are planning to contact the ANS for possible co-programming as well as the ACS Divisions of Geochemistry, Environmental Chemistry, etc. So far, the following symposia are scheduled for Chicago, IL, March 25 -29, 2007:

Understanding Radionuclide Transport in the Environment – A Comprehensive Approach.

Dr. Daniel Kaplan (SRS),
Daniel.kaplan@srs.gov

Fast automated radiochemistry separations in fundamental and applied nuclear chemistry

Dr. Dawn Shaughnessy (LLNL), shaughnessy2@llnl.gov, and Dr. Ralf Sudowe (LBNL), RSudowe@lbl.gov

Calixarenes: State of the Art and Perspective

(co-sponsored with I&EC)

This symposium will focus on all aspects of calixarene molecules, including modeling, design, synthesis, and use as extractants or complexants. Papers are expected to cover a wide range of topics in computer modeling, organic, inorganic and physical chemistry, nuclear chemistry, and separations science.
For information, contact:
Lætitia Delmau, Oak Ridge National Laboratory, delmaulh@ornl.gov, Dean Peterman, Idaho National Laboratory, dean.peterman@inl.gov

Boston, MA, August 19 – 23, 2007

Nuclear Structure and Reactions in the Era of Radioactive Beams

Dr. Larry Phair (LBNL), LWPhair@lbl.gov, and Prof. Romualdo T. de Souza (Indiana U.) desouza@indiana.edu

Don't forget to send Roy Lacey your suggestions for our 2008 meetings in New Orleans, and Philadelphia.

SERMACS 2006

Programming of interest to Division members is being organized by David Hobbs (david.hobbs@srnl.doe.gov) for the 2006 ACS Southeast Regional Meeting (SERMACS 2006). SERMACS 2006 will be held in Augusta, Georgia on November 1-4, 2006 (Wed. - Sat.). Three of the planned symposia are "Recent Developments in Nuclear Fuel Cycle Processing", "Radiochemical Separations in Nuclear Technology" and "Nuclear Medicine". These should be of specific interest to Division members in the US and abroad. We strongly encourage students to participate and have secured Division funding to support their attendance. For more information on these three and other planned symposia please contact David or visit the SERMACS 2006 web site: http://www.sermacs2006.org/

CALL FOR PAPERS

Symposium on

Analytical Chemistry in Nuclear Technology

American Chemical Society National Meeting

September 10-14, 2006 **San Francisco, CA**

General Organizers

Charles Coleman, Savannah River National Laboratory, Charles02.Coleman@srnl.doe.gov, (803) 725-1160 David Hobbs, Savannah River National Laboratory, David.Hobbs@srnl.doe.gov, (803) 725-2838
David Hobart, Los Alamos National Laboratory, dhobart@lanl.gov, (505) 667-0205

Deadline for Abstracts

150 word abstracts describing the paper are due by mid-April, 2006**.** Please consult the ACS web page ACS.org/Meetings/Fall 2006 for the exact deadline for abstract submittals and instructions for submitting them electronically via the web. The ACS web site will be available for electronic abstract submissions starting in February 2006.

Nature of the Symposium

Analytical Chemistry in Nuclear Technology **is an annual symposium held under the auspices of the Division of Nuclear Chemistry & Technology and co-sponsored by the Analytical Chemistry Division. The symposium is intended to provide focused sessions on several analytical technologies related to radiological and other hazardous materials and processes. Previous symposia have drawn a diverse mix of papers from laboratories associated with the Department of Energy and other government agencies, academic, international, and commercial institutions. Papers are solicited in all aspects of analytical chemistry related to the focused session topics. Contributors may also present papers that do not fall within the focused sessions in either the Nuclear Division General Session (oral presentations) or Sci-Mix Poster Session (please contact one of the symposium general organizers for more information).**

Focused Sessions

Half-day sessions consisting of about eight 20-minute talks per session on research, development, and/or interesting applications will be held in the following focus areas:

- **Developments and Applications of Laser-induced Ablation and Plasma Spectroscopy to Radiological and Hazardous Materials -** Organizer and Chair: Bruce Kaiser, Bechtel Corporation, bjkaiser@bechtel.com, (509) 371-4944.
- **Developments in Chromatography Methods -** Organizer and Chair: Jim Campbell, Pacific Northwest National Laboratory, James.Campbell@pnl.gov, (509) 376-0899.
- **Developments in Radiochemistry and Nuclear Counting Techniques -** Organizer and Chair: Lav Tandon, Los Alamos National Laboratory, tandon@lanl.gov, (505) 665-5458.
- **Innovative Techniques and Analytical Applications in Nuclear Waste Processing, Separation Science, and Material Science -** Co-organizers and Chairs: Steve Serkiz, Savannah River National Laboratory, steven.serkiz@srnl.doe.gov, (803) 725-5422; Marsha Lambregts, Idaho National Laboratory, marsha.lambregts@inl.gov, (208) 533-7051; Krissy Zeigler, Savannah River National Laboratory, kristine.zeigler@srnl.doe.gov , (803) 725-4180.
- **Bio-remediation in Nuclear Environments** - Co-organizers and Chairs: Amy Ekechukwu, Savannah River National Laboratory, amy.ekechukwu@srnl.doe.gov, (803) 725-1236; Chuck Turick, Savannah River National Laboratory, charles.turick@srnl.doe.gov, (803) 819-8407.
- **Process Gas Sensing Using Vibrational Spectroscopy -** Organizer and Chair: Scott McWhorter, Savannah River National Laboratory, scott.mcwhorter@srnl.doe.gov, (803) 725-8130.

Call for Papers

Projectile Fragmentation, Thirty Years Later

A Symposium Sponsored by the Division of Nuclear Chemistry & Technology

At the 232nd ACS National Meeting

San Francisco, CA

September 10 – 14, 2006

Early studies of the projectile fragmentation process carried out at the BEVALAC in Berkeley indicated the promise of this reaction mechanism. The exciting experiments have lead to a mature technique that is the underlying production process for major nuclear science facilities around the world. The Division of Nuclear Chemistry announces a symposium to review of this important field similar to meeting held in Dourdon, France in 1992. Topics to be highlighted include:

- **Advances in the theoretical modeling & experimental studies of projectile fragmentation**
- **The projectile fragmentation process and the formation of the most exotic isotopes**
- **Projectile fragments as tools for studies of nuclear properties and reactions**
- **Status of the current generation of fragment separators and the development of new devices**
- **Applications of fragmentation reactions in other areas of science, technology & medicine**

Abstracts may be submitted online at: http://oasys.acs.org
Deadline for online abstract submission will be early May, 2006

Check the Nuclear Chemistry and Technology Division web site for updates:
http://www.cofc.edu/~nuclear/

For additional information contact the organizer:

D.J. Morrissey; morrissey@nscl.msu.edu
Department of Chemistry and
National Superconducting Cyclotron Laboratory
Michigan State University, East Lansing, MI 48824

Call For Papers:

Separations of the f-*Elements*

232nd National Meeting of the
American Chemical Society
San Francisco, CA September 10 – 14, 2006

Sponsored by the Separation Science and Technology Subdivision of the Industrial and Engineering Chemistry Division
Co-sponsored by the Division of Nuclear Chemistry and Technology

Abstracts featuring traditional and emerging techniques for the separation of f elements are invited for this symposium. Papers will include basic research and applications development, and range from trace analytical scale to full process scale. Sessions will be organized to emphasize interactions between fundamentals and applications.

Areas of special interest are:

- Solid phase extractants
- Liquid–liquid extractions
- Advanced Fuel Processing (including non-aqueous methods)
- Development of analytical procedures
- Frontier areas of investigation

Organized by:

Dale D. Ensor
Department of Chemistry
Tennessee Tech. Univ.
Cookeville, TN 38505
densor@tntech.edu

Ken Nash
Department of Chemistry
Washington State University
Pullman, WA 99164-4630
knash@wsu.edu

Bill Crooks
Nuclear Material Technology
Los Alamos National Lab
Los Alamos, NM 87544
crooks@lanl.gov

Abstracts will be due in the Spring of 2006. At that time you should submit your abstract (preferably) using Online Abstract Submittal Form System (OASys) at www.acs.org/meetings/abstract/abinfo.html or directly to one of the organizers. Feel free to contact us to indicate your interest or to answer any questions.