

Chair's Corner

The year is off to a good start! We have several meetings and talks planned with guest speakers from around the CSRA and well as other great community outreach activities planned for throughout the year. Be sure to check the ACS-SR.org website for listings and opportunities to attend or participate in all the fun and excitement we have in store!

- Paul Beaumont

2019 SPRING DINNER MEETING

Friday, March 8th @ 6 pm

BETSY'S 'ROUND THE CORNER

224 PARK AVE, SW
AIKEN, SC

**Price: \$20/per person
\$10 for students**

[www.acs-sr.org/
upcoming-events](http://www.acs-sr.org/upcoming-events)

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ACS-SR Spring Dinner Meeting

We would like to extend an invitation to you for our upcoming Spring Dinner Meeting on March 8, 2019 at 6 pm. Dinner will be served at Betsy's Round the Corner (224 Park Ave, Aiken) and is \$20 for members and \$10 for students. Please see the attached flyer for more information on the two invited speakers from USC Aiken.

RSVP and pay online at our website by March 6th. More information can be found in Appendix C

<https://www.acs-sr.org/upcoming-events>

We hope to see you there!

ACS Secretary 'special discussion topic'

ACS Relevance to Current and Future Members: Challenges and Opportunities

The Council Policy Committee (CPC) has approved a Special Discussion topic titled "ACS Relevance to Current and Future Members: Challenges and Opportunities". **"There are likely many ways to improve the ACS value proposition. Prior to the Council meeting in Orlando, Councilors are asked to engage with ACS members from their local sections or divisions and to bring that input to the Council discussion."** As your local section councilor please bring me any input you have on this topic by March 22, this will allow me time to compile the information prior to the Orlando meeting.

You can email me at bmerup@comcast.net, call me at 803-645-3945, or speak with me in person. I look forward to putting your input before the council on this important issue.

- Chris Bannochie

Augusta University Seminar

James Cadieux



AUGUSTA
UNIVERSITY

SEMINAR

Friday, March 29th at 1:00PM
SCI W1008

James Cadieux
Principal Scientist
Nonproliferation Technologies
Savannah River National Laboratory



Adventures in Radiochemistry

More information regarding James Cadieux and his research can be found in Appendix D

Environmental Corner

Negative Emission Technologies for CO₂ Mitigation

According to the Paris Agreement, in order to limit the global temperature rise to less than 2°C, worldwide emissions of CO₂ must be net-zero by 2050. A recent report from the National Academies of Science summarized a variety of Negative Emissions Technologies (NETs), or technologies that can remove carbon dioxide from the air or from plant effluent streams. These technologies can partially offset emissions elsewhere, but a massive global reduction in CO₂ production is still needed to achieve the goal of zero net emissions by 2050. The various NETs from the National Academies report are summarized below. More detail can be found on C&EN along with research needs for the various technologies. These might be of interest to CSRA chemists and engineers interested in seeking funding for environmental research.

Upcoming ACS Meetings

257th National Meeting & Exposition:

Chemistry for New Frontiers

Orlando, FL

March 31 - April 4, 2019

258th National Meeting & Exposition:

Chemistry of Water

San Diego, CA

August 25-29, 2019

Southeastern Regional SERMACS 2019

Savannah, GA

October 20 - 23, 2019



Upcoming Webinars

REGISTER HERE:

www.acs.org/content/acs/en/acs-webinars.html



Providing Science and Technology Support to Congress: Plans and Opportunities

Thurs., March 7th @ 2PM EST

Join Karen Howard and Timothy Persons of the Government Accountability Office to discover their role in providing science and technology support to Congress. Learn how you can impact future products and services as well as methods and frameworks to provide policy options to Congress.



Is Biodegradability a Solution to Plastic Waste Pollution in the Ocean and on Land?

Thurs., March 14th @ 2PM EST

Join Ramani Narayan of Michigan State University to discover the science of biodegradability and compostability, as well as identify the facts vs. the hype.

Environmental Corner (continued)

Technology	Description	Cost (\$/metric ton CO ₂)	Removal Capacity	Benefits	Drawbacks
Air Capture	Direct adsorption of CO ₂ from air	200-1000	High	Mobile	Energy-intensive
Bioenergy	Use biomass as fuel, then store CO ₂ underground	200-1000	3.5-5.2 billion tons per year	Renewable energy	Land use, transportation
Geological Sequestration	Pump supercritical CO ₂ underground	Low	2 trillion tons (total)	High capacity	Transportation
Mineralization	Convert CO ₂ to carbonates using natural minerals	100	High	High capacity	Slow reaction kinetics, transportation
Plant Growth	Reforestation, etc.	20-50	2.5-3 billion tons per year	Environmental benefits	Land availability

- B. Thompson

Adopt-A-Highway

ACS-SR is continuing to participate in the **South Carolina Adopt-a-Highway Program** in 2019, with the help of the local section of the YCC. ACS-SR is committed to maintaining a one mile section of highway located in Aiken County

We typically meet at 9:30 am at the Country Inn & Suites, pick up trash for 1-2 hours, and then have an informal social gathering (aka free lunch). Also, we have an ongoing competition to see who can find the weirdest piece of trash. Past contenders include a box of brand new pig-themed t-shirts, a \$1 bill, and a fake pickle. You also get to keep whatever you find! (If that's not motivation enough, we will also give out a small prize.) Clean-up dates are currently scheduled for:

March 9

June 8

September 7

November 9

If you are interested in participating, please sign up on the Doodle poll linked below. We look forward to seeing you there!

<https://doodle.com/poll/8re5ru9sh738twfz>



ACS Leadership Institute

The ACS Leadership Institute was held in Atlanta, GA. Kaitlin Lawrence (chair-elect) and Chris Bannochie (councilor) represented ACS-SR at the meeting. The Leadership Institute is an annual meeting that gives ACS members the opportunity to further develop their leadership skills as well as network with other local section officers, and ACS governance. This year, the focus was on the International Year of the Periodic Table (IYPT) and celebrating the 10th year of the ACS Leadership Development System.



National ACS Workshop – Spring 2019



SPRING 2019 ACS WORKSHOP

Developing Graduate Student Leadership Skills in Laboratory Safety

SUNDAY, MARCH 31 • 3:00–6:00 PM



KALI A. MILLER



KENDRA L. DENLINGER

Laboratory safety teams (LSTs), have emerged in research-intensive science departments across the country as an effective way to improve the culture of safety. In addition, these programs empower graduate students to develop chemical safety leadership skills that will prove useful for future employment. This three-hour workshop will be led by two safety program experts from the University of Illinois at Urbana-Champaign and Xavier University. It will describe current programs and research emphasizing the challenges and opportunities of safety culture in the academic environment. The purpose of this workshop is to help develop individualized plans for the creation or improvement of student safety programs. Other key topics include hazard assessment, risk management, safety management practices, and complementary top-down approaches. Participants will be awarded a certificate that can be noted on their resume.

This workshop is sponsored by the ACS Committee on Chemical Safety, ACS Safety Programs, and ACS Division of Chemical Health and Safety. Content is primarily directed at graduate student issues, but faculty and staff are encouraged to participate.

SPACE IS LIMITED!

Register today for only \$25.00

dchas.org/lst-workshop

For more information: lstworkshop@dchas.org



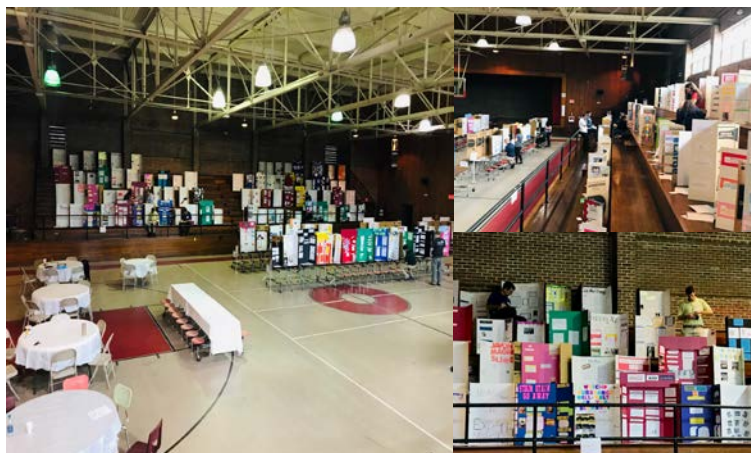
ACS-SR YCC Chemistry's Colorful Clue Millbrook Elementary School

YCC volunteers helped four classes of 5th grade students at Millbrook Elementary School in Aiken, SC, learn about chemistry's colorful clue – indicators. The students were told a stream near their school that they have been testing suddenly turned acidic. The students were guided through a series of experiments to help solve the mystery. The students made an indicator solution using bromothymol blue, observed the color change with acid and base, and formed carbonic acid from carbon dioxide. The 5th graders summarized their findings, including the key term, indicator, and helped identify dry ice as the culprit for turning the stream acidic.



Guinyard-Butler Middle School Science Fair

On Friday, February 22nd, ACS-SR volunteers helped judge the 7th and 8th grade science projects at Guinyard-Butler Middle School in Barnwell, South Carolina. Members Ashlee Swindle (Immediate Past Chair) and Robin Brigmon helped pick the top science fair projects to go to Nationals alongside other engineers and chemists from SRNL (Heather Brant and Yuriy Veytskin), other companies such as Bridgestone Tire, as well as chemistry majors from nearby Universities. This was another successful event full of amazing projects thanks to Steve Smith, his technical team, and science teachers at Guinyard-Butler MS. Posts can be found on ACS-SR Facebook page, GBMS Facebook page, and <https://barnwell-gbms.weebly.com/>.



Our 2019 Elected Officials



Chair
Dr. Paul Beaumont



Chair-Elect
Dr. Kaitlin Lawrence



Treasurer
Dr. Lewis Baylor



Secretary
Dr. Michael DeVore II

Current ACS-SR Officers
www.acs-sr.org/our-team

Current YCC Officers
www.acs-sr.org/about-us

Denise L. Creech Award (Teachers)

www.acs-sr.org/teacher-nominations

Nominate a great CSRA high school chemistry teacher!

- Teacher receives award plaque and \$500
- School receives \$500 for new lab supplies

ACS-SR Student Travel Grant (Students)

www.acs-sr.org/teacher-nominations

Apply for a travel grant to an ACS meeting.

- Reimbursement up to \$500

Chemistry Teachers

Educational resources available for elementary through graduate school, workshops and webinars, alternative high school teacher certification, and scholarships, grants, & awards

<https://www.acs.org/content/acs/en/education/educators.html>

- AACT (American Association for Chemistry Teachers): K-12 Chemistry Resources
<https://teachchemistry.org/classroom-resources/safety>

Graduate Students & Post doctorate Scholars

Support including career planning, networking, awards & fellowships, mentoring, and professional development.

www.acs.org/content/acs/en/education/students/graduate.html

Undergraduate Chemistry Students

Support including internship, scholarship, and award opportunities, abstract writing, preparation for graduate school, and career planning.

<https://www.acs.org/content/acs/en/education/students/college.html>

High School Chemistry Students

Programs and resources to include clubs, competitions, magazines, research projects (i.e. SEED), scholar programs, and college planning.

<https://www.acs.org/content/acs/en/education/students/highschool.html>

ACS National Nominations

Nominations are especially needed for the awards below.

- ACS Award: [Affordable Green Chemistry](#)
- ACS Award: [Creative Invention](#)
- ACS Award: [Encouraging Disadvantaged](#)
- ACS Award: [Students into Careers in the Chemical Sciences](#)
- Earle B Barnes Award: [Leadership in Chemical Research Management](#)
- Elias J. Corey Award: [Outstanding Original Contribution in Organic Synthesis by a Young Investigator](#)
- George C. Pimentel Award: [Chemical Education](#)
- James T. Grady-James H. Stack Award: [Interpreting Chemistry for the Public](#)
- Kathryn C. Hach Award: [Entrepreneurial Success](#)
- George and Christine Sosnovsky Award: [Cancer Research](#)
- Henry H. Storch Award: [Energy Chemistry](#)

Submit: www.nominate.acs.org

Visit www.acs.org/nationalawards for more information about submission of nominations and required documents.

Online and Short Courses available to ACS members at discount cost

Visit: proed.acs.org

For questions: proed@acs.org

Win your own
Sidney Harris
original cartoon!



For more information and the official entry form, go to:
<http://acshist.scs.illinois.edu/index.php>

Cartoonist Sidney Harris will draw a cartoon based on the winning caption. The grand prize winner will receive the original cartoon based on his/her winning caption.

SCIENCE ANTIQUITY

March 6th, 1869

Dmitri Mendeleev

Mendeleev's Periodic Table was announced to the Russian Physicochemical Society. He is often referred to as the Father of the Periodic Table.

March 21st, 1942

Element 94

Plutonium (Pu) was named on this day in 1942, taking its name from Pluto. First discovered by Glenn Seaborg as a product of nuclear fission.

March 28th, 1979

Three Mile Island

The Three Mile Island nuclear power plant in Pennsylvania underwent a partial meltdown on this day in 1979.

"You must never be fearful of what you are doing when it is right."

Marie Curie

Periodically Funny News and Molecule of Week 5

Sidney Harris original cartoon!



There is a healthy debate among scientists about which discipline can provide the best tools for solving key societal problems. This cartoon pokes fun at the sometimes—contentious relationship between chemists and biologists. Chemists are often the inventors and early developers of materials and techniques that drive biotechnology. Is this area (arguably biology's most useful side) then really just chemistry in disguise? Can chemists lay claim to the most impactful discoveries within it? Whether you'd argue yes or no to these questions, it could be the biology community that gets the last laugh. Another clue in the man's crossword puzzle: "A biologist who has made seminal discoveries in his or her field, perhaps (4 words)." The answer: N-O-B-E-L-L-A-U-R-E-A-T-E-I-N-C-H-E-M-I-S-T-R-Y.

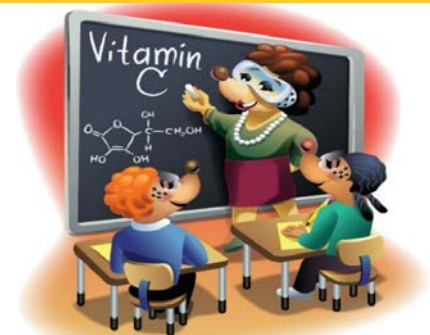
- Chad Mirkin, Northwestern

SCIENTIFIC AMERICAN ARTICLE

<https://www.scientificamerican.com/custom-media/pictet/a-material-to-save-the-world/>

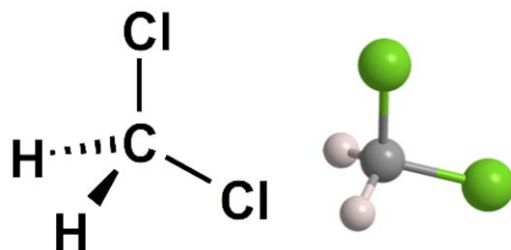
JACS Publication (Storage of H, CH₄, and CO₂)
<https://pubs.acs.org/doi/pdfplus/10.1021/ja9015765>

Yaghi Awards: <http://yaghi.berkeley.edu/news.html>



Molecule of the Week

Are you worried that I contaminate your decaf coffee?



Dichloromethane, commonly called methylene chloride, is a solvent that is widely used in chemical research and manufacturing. It is a highly volatile liquid (see fast facts table), but it is neither flammable nor explosive in air.

Dichloromethane is commonly produced by chlorinating methane. The process also produces the other three C1 chlorohydrocarbons—chloromethane, trichloromethane (chloroform), and tetrachloromethane (carbon tetrachloride). The four are separated via distillation.

Although dichloromethane is the least toxic C1 chlorohydrocarbon, it does present hazards. Inhaling it can produce symptoms ranging from drowsiness to respiratory tract irritation and even death. It also may be carcinogenic, but not enough studies have been done to establish the degree of exposure that causes cancer.

Despite its health risks, dichloromethane is one of the main solvents used to decaffeinate coffee beans. After the caffeine is removed, the solvent's volatility makes it easy to remove residual solvent. Any remaining dichloromethane is well below the 10-ppm concentration allowed by the US Food and Drug Administration.



AIKEN, SC

Savannah River Nuclear
Solutions

sjobs.brassring.com

Atkins

www.linkedin.com/jobs/view/917977654

- Lab Technician

N. AUGUSTA, SC

Ambiopharm

www.ambiopharm.com/

- Process Development Chemist
- Quality Assurance Associate II & III
- Quality Control Chemist II

AUGUSTA, GA

DSM

www.linkedin.com/jobs/view/945836583

- Lab Technician 3

Southern Company
(Plant Vogtle 1&2)

www.linkedin.com/jobs/view/964731489

- Chemistry Supervisor

Georgia Military College

www.linkedin.com/jobs/view/796512030

- Adjunct Professor:
Chemistry (847-094)

The CSRA Chemist

Our newsletter is published eight times per year by the Savannah River Section of the American Chemical Society. Look for them **February – May and August – November**

Opinions expressed by the editor or contributors do not necessarily reflect the official position of the Section.

Mailing Address

Savannah River Section –
American Chemical Society
c/o Mr. Brent Peters
Savannah River National Laboratory Building
999-2W
Aiken, SC 29808

All newsletter articles should be submitted by e-mail to brent.peters@srnl.doe.gov

Meeting Announcements: The CSRA Chemist will announce scientific meetings of interest to chemists and chemical engineers (when space is available).

For information and deadlines, contact Brent Peters or visit our website.

www.acs-sr.org

Change of Address (ACS National):

On the web at www.acs.org; by phone at 800-333-9511; by email: service@acs.org.

The Local Section receives roster updates monthly from ACS National.

Local Section **Chem**unication Information

Below:

#ACSSavannahRiver

Executive Committee – 2018

Chair

Paul Beaumont (803)645-7639

Chair-Elect/Program Chair

Kaitlin Lawrence (803)514-0272

Immediate Past-Chair

Ashlee R. Swindle (803)725-6819

Secretary

Michael Devore (803)725-0365

Treasurer

Lewis Baylor (706)364-6919

Councilor

Chris Bannochie (803)725-8088

Alternate Councilor

Katie Heroux (803)514-0472

Hospitality & Elections

Maria Kriz (803)725-9454

Membership

Kathryn Taylor-Pashow (803)725-8215

Projects Coordinator

Linda Youmans (803)952-7885

Public Relations

Brent Peters (803)646-9426

YCC Chair

Thanh-Tam Truong (803)646-4998

YCC Co-Chair

Open Position

Publications Editor

Brent Peters (803)646-9426

Website Editor

Ashlee Swindle (803)725-6819

ACS - Savannah River

Local Section

2019 DENISE CREECH AWARD

Outstanding High School Chemistry Teacher Award

The Savannah River Section of the American Chemical Society (encompassing Aiken, Barnwell, Edgefield, McCormick, Columbia, Richmond, Burke, Emanuel, Jenkins, and Screven Counties) is currently accepting nominations for the 2018 Denise L. Creech Outstanding High School Chemistry Teacher Award. This award includes a \$500 gift to the teacher and a \$250 grant for laboratory supplies to the school.

The Denise L. Creech Outstanding High School Chemistry Teacher Award, given out by the Savannah River local section, is named in honor of Denise L. Creech, an outstanding South Carolina high school chemistry teacher, who has since moved on to a position at the American Chemical Society's headquarters in Washington, D.C. Please help us encourage and support high school chemistry education by passing this notice on to appropriate teachers and/or students.

If you wish to nominate someone or yourself, please complete the nomination form below or contact Ashlee Swindle (Ashlee.Swindle@srnl.doe.gov) for more information. This award has an open nomination period and a winner will be selected in December 2019. Nominees not selected this year will remain under consideration for the award for 3 years.

Nominee Information:

Nominee Name:	<input type="text"/>		
Present Position (Exact Title):	<input type="text"/>		
School:	<input type="text"/>		
City:	<input type="text"/>	State:	<input type="text"/>
Telephone:	<input type="text"/>		
E-mail:	<input type="text"/>		
Website (optional):	<input type="text"/>		
Nominator Information (can be self):	<input type="text"/>		
Nominator Name:	<input type="text"/>		
City:	<input type="text"/>	State:	<input type="text"/>

Please supply the following information on the Nominee, separate pages may be used:

1. Teaching experience, including years and location, chemistry courses taught; other teaching experience/courses taught.
2. Description of nominee's qualification for the award and reasons for nominating.
3. Educational background (encouraged but not required).
4. Provide the names and contact information of at least 2 references (colleagues, former students, etc.) that we may contact.

Please send completed forms by **November 4, 2019** to
Ashlee.Swindle@srnl.doe.gov



The Savannah River Section of the American Chemical Society will be giving a \$500 travel grant to an undergraduate student attending an ACS Conference/Meeting by the deadline October 7, 2019.

Winners will be chosen based on the information provided and will be given \$500 after attending an ACS Conference/Meeting. Preference will be given to student presenters.

Undergraduate students interested in applying must fill out the form below and return to ACS-SR at ACSSavannahRiver@gmail.com.

Applicant Information

Applicant's Name: _____

E-mail: _____

School Attending: _____

Degree Seeking: _____

Year during conference (Freshman/Sophomore/Junior/Senior): _____

Expected Graduation Date: _____

Meeting Attending: _____

Meeting Date(s): _____

Conference Role (Oral Presenter/Poster/Attendee): _____

Abstract Title (if presenting): _____

State the reason for attending as well as what you hope to gain by attending the meeting:

Are you an ACS member (Yes/No)? _____

Have you been active in or attended events sponsored by the ACS-SR (Yes/No)? If yes, please list:

Have you received any other travel grants for this meeting's attendance (Yes/No)? If yes, please list:

Have you previously attended an ACS meeting (Yes/No)? If yes, please list:

Advisor Information

Advising Professor's Name: _____

E-mail: _____

Next Deadline: **October 7, 2019**

Please e-mail applications to ACSSavannahRiver@gmail.com.

Contact Paul Beaumont with additional questions.
Email: Paul.Beaumont@srnl.doe.gov / Phone: 803-645-763



ACS Local Section

Savannah River

ACS-SR Spring Dinner Meeting Featuring:

Dr. Kenneth M. Roberts

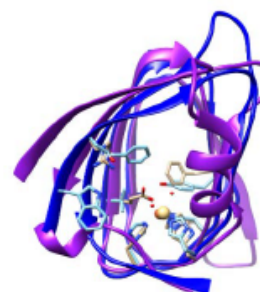
Assistant Professor of Biochemistry, USC Aiken

DAD: A Novel Reaction or An Old Dog with New Tricks

Carbon-carbon bond cleavage remains a frequently difficult synthetic task, yet nature is built upon the making and breaking of carbon-carbon bonds. This talk will describe preliminary investigations of 2,4'-dihydroxyacetophenone dioxygenase (DAD), an enzyme that catalyzes the oxidative cleavage of an α -hydroxyketone moiety, and comparisons to another loosely related enzyme, acireductone dioxygenase (ARD').

Dr. Kenneth Roberts's research is focused on understanding enzyme-catalyzed carbon-carbon bond cleavages through a variety of kinetic techniques. Dr. Roberts received his PhD studying cytochromes P450 under Jeffrey Jones at Washington State University, then

investigated several oxidative enzymes as a postdoctoral fellow under Paul Fitzpatrick at the University of Texas Health Science Center at San Antonio.



Dr. Nicholas Marshall

Assistant Professor of Organic Chemistry, USC Aiken

Making sticky metals; practical surface engineering technologies

Many portable technologies for making sensors and other devices depend on the interactions of molecules at an interface just a few nanometers in thickness. This talk will describe some interesting problems we have worked on in this category, including interfaces for biosensors, antimicrobials, and photovoltaics.

Dr. Nicholas Marshall's research group at USC Aiken develops new techniques for modifying materials and surfaces by adapting the tools of organic synthesis. Dr. Marshall received his PhD in the interdisciplinary Locklin group at the University of Georgia, and has worked on diverse systems including biosensors, antimicrobial coatings, and electrochromic materials.



Friday, March 8th at 6 pm

Betsy's 'Round the Corner, 224 Park Ave, SW, Aiken, SC

\$20 for members & non-members/\$10 for students

Dinner Included, Cash Bar Available

RSVP by March 4: www.acs-sr.org/upcoming-events

Host: Kaitlin.Lawrence@srnl.doe.gov



AUGUSTA UNIVERSITY

SEMINAR

Friday, March 29th at 1:00PM

SCI W1008

James Cadieux

Principal Scientist

Nonproliferation Technologies

Savannah River National Laboratory



Adventures in Radiochemistry

This talk will briefly discuss the origins of the field of radiochemistry (as opposed to nuclear chemistry) from Madame Curie's "chemistry of the imponderables – Ra and Po: 100 years of radioactivity" to its rapid expansion during the Manhattan Project (Coryell & Sugarman's "good books": "The Analytical Chemistry of the Manhattan Project"). It will examine why radiochemistry is inconvenient but indispensable in the measurement of alpha and beta emitting radionuclides. It then will cover a selection of radiochemical topics from the speaker's experience such as "The rare earth elements as environmental tracers", "The Metrology of Plutonium from kilograms to femtograms", "Fukushima Fallout at SRS", and "Lutathera – Nuclear Medicine - Targeted Radiotherapy with Lu-177".

James Cadieux completed his undergraduate degree in chemistry from Washington University in St. Louis. Here he was highly influenced by professors who worked on the Manhattan Project, including experience as a research assistant in the radiochemistry group of Herb Potratz that included trace analysis of environmental samples. He completed his masters at the University of Chicago under the mentorship of Anthony Turkevich searching for exotic particles using proton accelerators at Fermi Lab, Argonne, and Los Alamos. He has 40 years experience at the Savannah River Site, predominantly in the R&D laboratory, and mostly involving measurement of actinides. He has had experience with just about every type of nuclear detection device and with many analytical instruments in radioactive environments. He is currently responsible for radiochemical separations and radioanalytical measurements in low-level samples. They specialize in the detection of anthropogenic activities, particularly the actinides, by alpha, gamma and thermal ionization mass spectrometry at levels at or below the natural background.