NAMP EDUCATION AND TRAINING PROGRAM AND WEBINARS

61st Annual Radiobioassay and Radiochemical Measurements Conference (RRMC-2015) Iowa City, IA October 25th- 30th

Mansour Akbarzadeh, Patricia Paviet, John Griggs, Berta Oates

NAMP

Savannah River National Laboratory™
OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

NAMP EDUCATION AND TRAINING PROGRAM AND WEBINARS

NWP Nuclear Waste Partnership LLC
An AECOM-led partnership with B&W and AREVA

NEW BRUNSWICK LABORATORY

INL Idaho National Laboratory

In Cooperation with our University Partners

OSU Oregon State University

ILLINOIS INSTITUTE OF TECHNOLOGY

COLORADO SCHOOL OF MINES 1874

THE UNIVERSITY OF IOWA

CLEMSON UNIVERSITY

FIU FLORIDA INTERNATIONAL UNIVERSITY

UNM

CALIFORNIA STATE UNIVERSITY LONG BEACH 1949

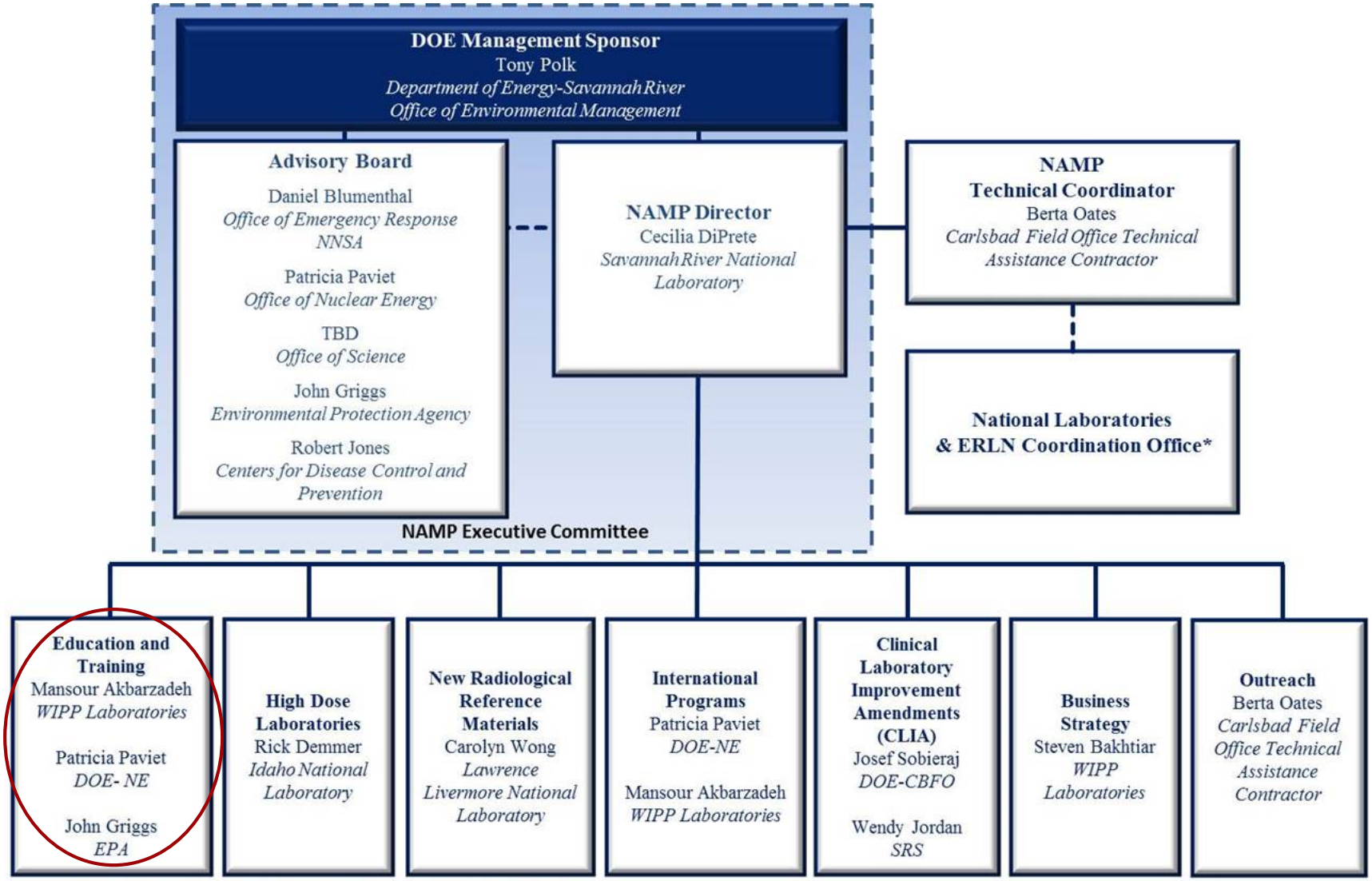
UNLV

UNIVERSITY of CALIFORNIA · IRVINE

VIRGINIA COMMONWEALTH UNIVERSITY MCV RPI 1838

1914 2014 CENTENNIAL CELEBRATION THE UNIVERSITY OF TEXAS AT EL PASO

NAMP Organizational Structure



*NAMP Laboratories participating in Emergency Response Laboratory Network

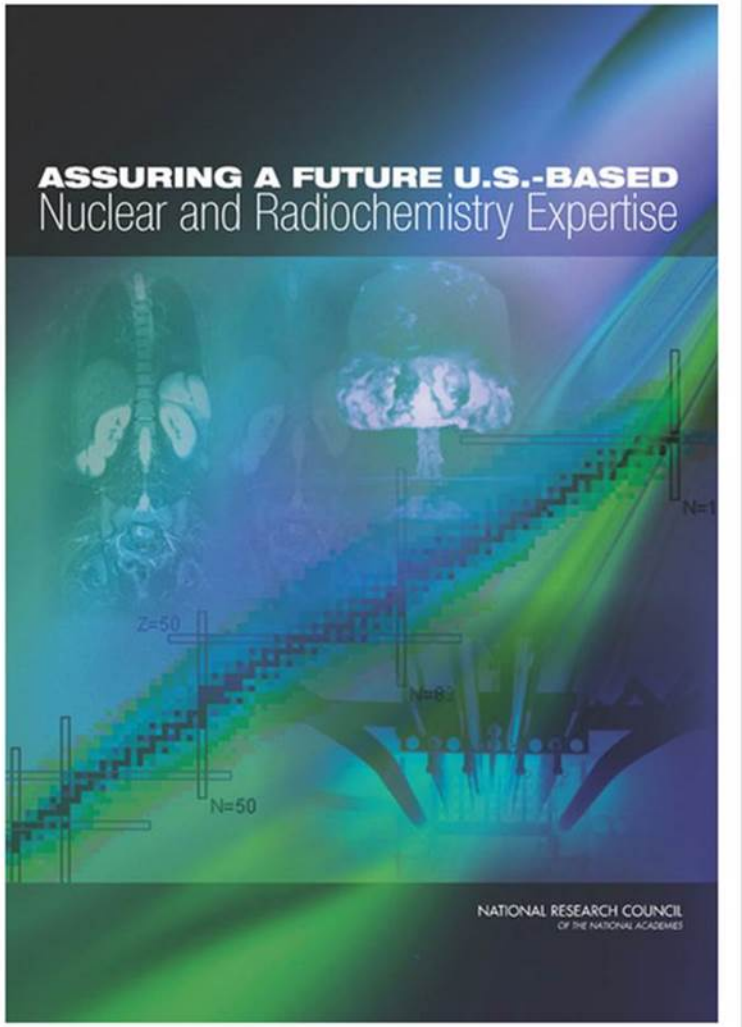
INL	Idaho National Laboratory	SRS	Savannah River Site
ORISE	Oak Ridge Institute for Science and Education	WIPP	Waste Isolation Pilot Plant
SNL	Sandia National Laboratories	Y-12	Y-12 Nuclear Security Complex, Oak Ridge, TN

NAMP Education and Training Subcommittee Mission

- NAMP established a subcommittee to promote training and education in radiochemistry to avert the predicted loss in expertise
- Several universities and institutions have joined this subcommittee

Partnerships

Declining Workforce in Radiochemistry



In May 2012, the National Academy of Sciences issued a report on the demand for and supply of nuclear and radiochemistry experts, a major component of the workforce in such areas as nuclear waste management, the nuclear fuel cycle, nuclear medicine, safeguards, and nuclear forensics.

National Research Council, "Assuring a Future U.S.-Based Nuclear and Radiochemistry Expertise, May 2012, http://www.nap.edu/catalog.php?record_id=13308

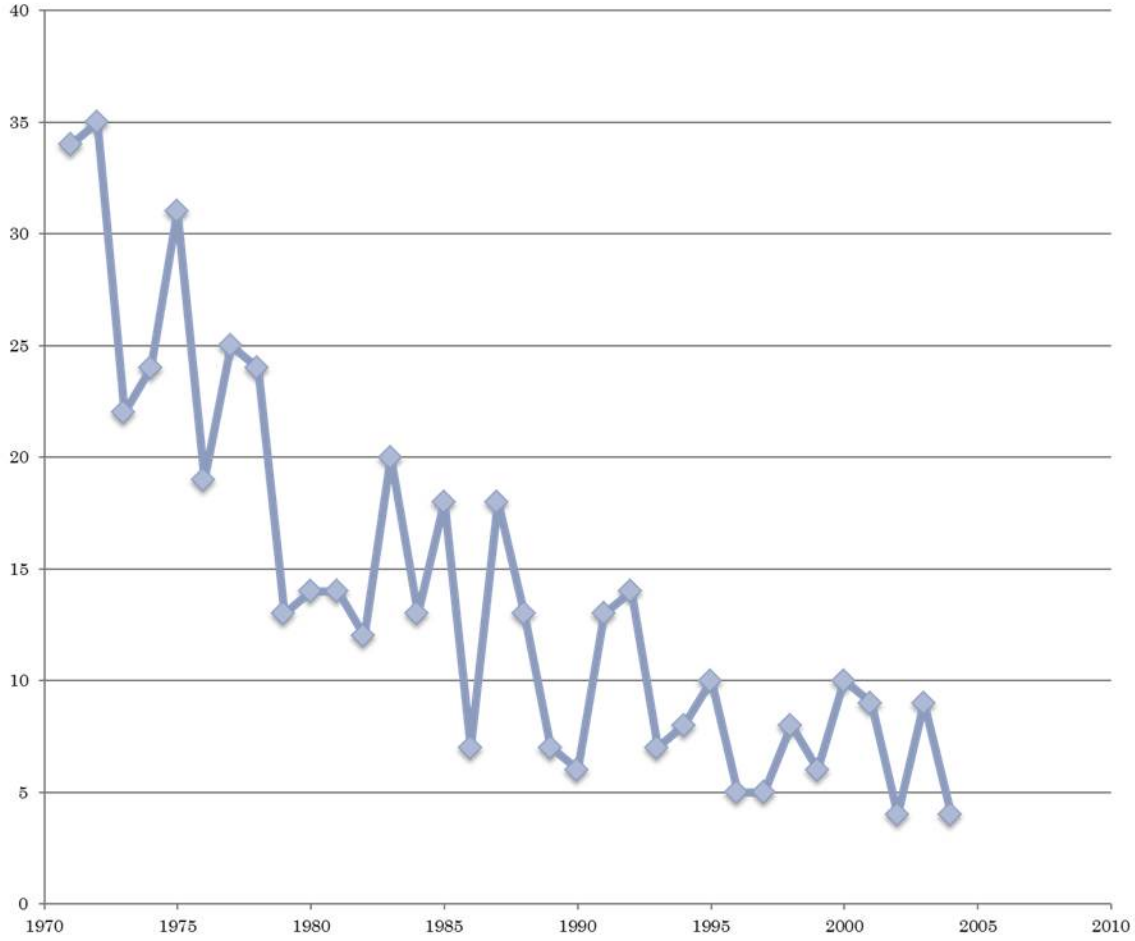
Declining Workforce in Radiochemistry (Cont.)

- The report noted that while many in the current workforce are approaching retirement age, the number of students opting for careers in nuclear and radiochemistry has decreased dramatically over the past few decades.

- To avoid a shortage of trained personnel, it is necessary to increase student interest in careers in these critical fields, improve the research and educational capacity of universities and colleges, and offer sector-specific on-the-job training.

National Research Council, "Assuring a Future U.S.-Based Nuclear and Radiochemistry Expertise," May 2012

Declining PhD Degrees in Nuclear Chemistry in the United States



Adapted from NAS report, 2011

- U.S. granted PhD degrees in Nuclear Chemistry from 1970 to 2004
- Range from 35 to 4

Advantages to Webinars

Issues and Challenges

- Aging facilities within the DOE complex
- Declining workforce
- Few universities teaching radiochemistry
- Lack of professors
- Lack of facilities for training

Radiochemistry Webinars

- Promote radiochemistry education
- Introduce radiochemistry to a new audience
- Advance the knowledge of personnel in the discipline

Audience

- Managers
- Technicians
- Students
- Regulators
- Health Physicists
- Quality Assurance Officers
- Chemists

Announcements

- Invitation
- Title of presentation
- Lecture overview
- Learning objectives
- Who should attend
- Registration link
- Bio of the presenter
- Future presentations

NAMP

Radiochemistry Webinars Mini-Series

9/1/2015

Greetings,

The NAMP cordially invites you to attend web-based lectures on specific radiochemistry topics developed in cooperation with the EPA and other Federal agencies, and our university partners. The selected topics are designed to strengthen the participant in the areas of professional engineering practice identified by the nuclear industry or national laboratories, including but not limited to actinide chemistry in the environment and in the nuclear fuel cycle. Short (1- to 2-hour) webinars on specific radiochemistry topics are presented by renowned university professors and leading scientists in radiochemistry.

Please plan to join us for High Resolution Gamma Ray Spectrometry Analyses for Normal Operations and Radiological Incident Response

Who Should Attend: Laboratory Technicians, Chemists, Chemical Engineers, Regulators, Managers & Students

Lecture Overview: This webinar presents the major aspects of a newly issued document entitled, "High Resolution Gamma-Ray Spectrometry Analyses for Normal Operation and Radiological Incident Response" and demonstrates the importance of software and radioactive decay laws when performing gamma-ray analysis.

Free Webcast: Thursday, September 24, 2015, at 1:00 pm Eastern Time, 12:00 pm

Register NOW at:
https://foodshield.connectsolutions.com/e7md131d3l3/event/registration.html

For more information, please contact: Berta Oates at boates@portageinc.com or visit the NAMP website at http://www.wipp.energy.gov/namp

Meet the Presenter...

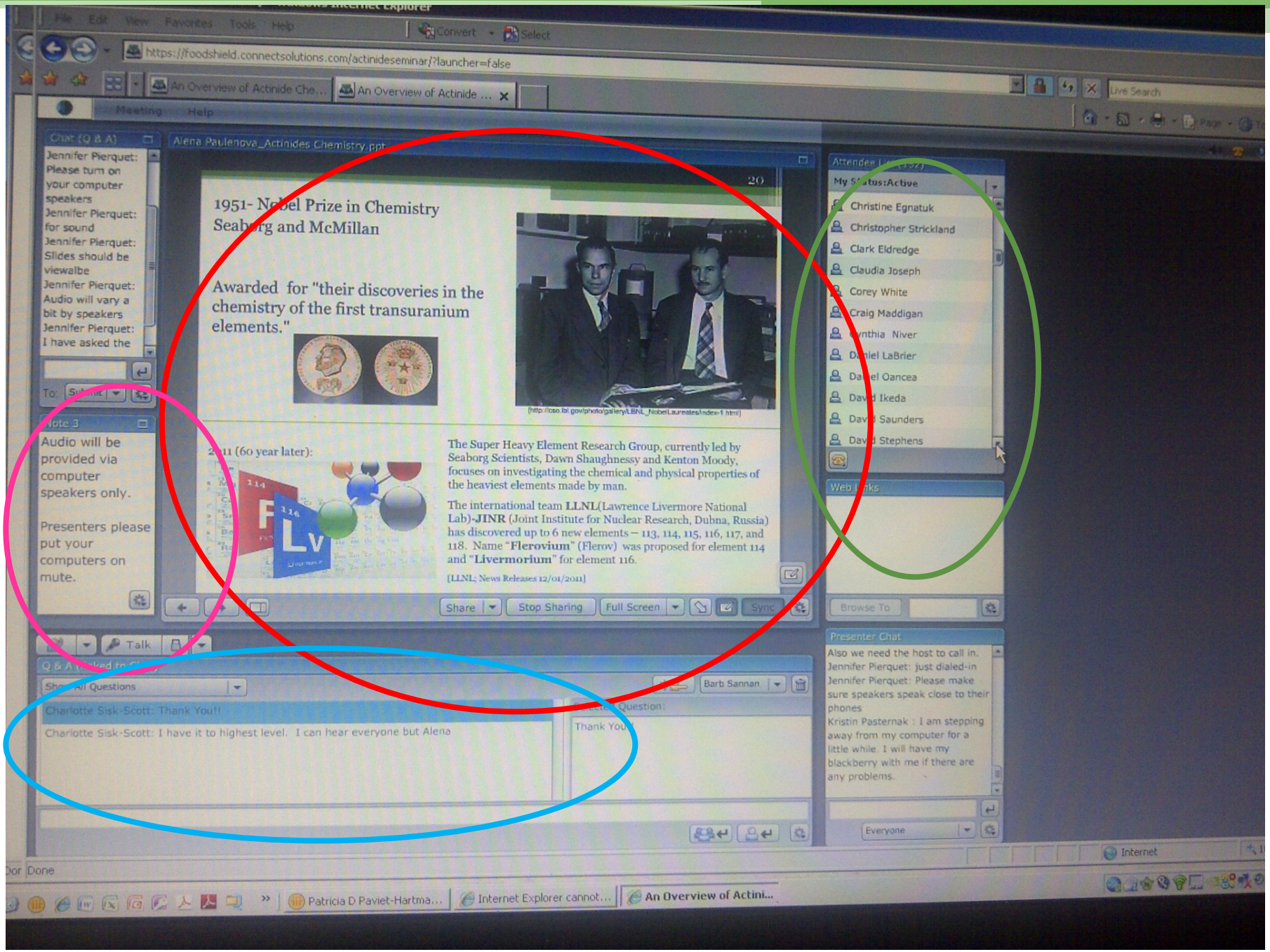
Dr. Robert Litman

EMS Robert Litman, PhD, has been a researcher and practitioner of nuclear and radiochemical analysis for the past 44 years. He is well respected in the nuclear power industry as a specialist in radiochemistry, radiochemical instrumentation and plant systems corrosion. He has co-authored two chapters of MARLAP, and is currently one of a team of EMS consultants developing radiological laboratory guidance on radionuclide sample analyses in various matrices, radioactive sample screening, method validation, core radioanalytical laboratory operations, contamination, and rapid radioanalytical methods. He authored the Radionuclides section of the EPRI PWR Primary Water Chemistry Guidelines, and has been a significant contributor to the EPRI Primary-to-Secondary Leak Detection Guidelines. Dr. Litman has worked with the NRC in support of resolving GSI-191 issues (chemical effects following a loss of coolant accident) at current nuclear power plants and reviewed designs for addressing that safety issue for new nuclear power plants. His areas of technical expertise are gamma spectroscopy and radiochemical separations. Dr. Litman has been teaching courses in Radiochemistry and related special areas for the past 28 years.

Upcoming NAMP Radiochemistry Webinars:

October 22, 2015 Nuclear Radiation Safety
November 19, 2015 The Diverse Geologic Environments of Natural Uranium Resources
December 10, 2015 Introduction to Nuclear Forensics

Savannah River National Laboratory™
OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS


https://foodshield.connectsolutions.com/actinideseminar/?launcher=false
An Overview of Actinide Che...
An Overview of Actinide ...
Meeting
Help
Chat (Q & A)
Jennifer Pierquet: Please turn on your computer speakers
Jennifer Pierquet: for sound
Jennifer Pierquet: Slides should be viewalbe
Jennifer Pierquet: Audio will vary a bit by speakers
Jennifer Pierquet: I have asked the
To:
Note 3
Audio will be provided via computer speakers only.
Presenters please put your computers on mute.
Alena Paulenova_Actinides Chemistry.ppt
20
1951- Nobel Prize in Chemistry
Seaborg and McMillan
Awarded for "their discoveries in the chemistry of the first transuranium elements."
[http://cso.lbl.gov/photo/gallery/LBNL_NobelLaureates/index-1.html]
2011 (60 year later):
The Super Heavy Element Research Group, currently led by Seaborg Scientists, Dawn Shaughnessy and Kenton Moody, focuses on investigating the chemical and physical properties of the heaviest elements made by man.
The international team LLNL(Lawrence Livermore National Lab)-JINR (Joint Institute for Nuclear Research, Dubna, Russia) has discovered up to 6 new elements – 113, 114, 115, 116, 117, and 118. Name "Flerovium" (Flerov) was proposed for element 114 and "Livermorium" for element 116.
[LLNL; News Releases 12/01/2011]
Share
Stop Sharing
Full Screen
Sync
Attendee List
My Status:Active
Christine Egnatuk
Christopher Strickland
Clark Eldredge
Claudia Joseph
Corey White
Craig Maddigan
Cynthia Niver
Daniel LaBrier
Daniel Oancea
David Ikeda
David Saunders
David Stephens
Web Links
Browse To
Talk
Q & A
Show All Questions
Barb Sannan
Charlotte Sisk-Scott: Thank You!!
Charlotte Sisk-Scott: I have it to highest level. I can hear everyone but Alena
Question:
Thank You
Presenter Chat
Also we need the host to call in.
Jennifer Pierquet: just dialed-in
Jennifer Pierquet: Please make sure speakers speak close to their phones
Kristin Pasternak : I am stepping away from my computer for a little while. I will have my blackberry with me if there are any problems.
Everyone
Done
Internet
Patricia D Paviet-Hartma...
Internet Explorer cannot...
An Overview of Actini...

Series #1: Actinide Chemistry April 2012 to April 2013

Webinar Topic	Attendance	Archived Viewings
An Overview of Actinide Chemistry	165	821
Uranium Chemistry	183	310
Plutonium Chemistry – General Properties of Plutonium	142	218
Environmental Behavior of Plutonium	136	191
Environmental Behavior of Uranium	164	101
Analytical Chemistry of Plutonium and Uranium	210	93
Source Preparation for Alpha Spectroscopy	153	246
Sample Dissolution	186	107
Neptunium Chemistry	157	63
Trivalent Actinides	151	56
Transplutonium Actinides	115	38
Radium Chemistry	235	180

Series #2: Environmental Radiochemistry/Bioassay May 2013 to June 2014

Webinar Topic	Attendance	Archived Viewings
Radiological Data Validation and Verification	205	172
Traceability and Uncertainty	260	82
Bioassay	181	95
Gamma Spectrometry (Part 1)	273	303
Gamma Spectrometry (Part 2)	184	89
Overview of EPA Incident Response Guides and Rapid Methods	182	46
Detection Decisions and Detection Limits	234	80
Guide to Uncertainty in Measurement	226	73
Mass Spectrometry	235	59
Alpha Spectroscopy	237	162
Applications in Liquid Scintillation Counting	236	150
Unconventional Drilling/Hydraulic Fracturing and Natural Radioactivity	269	147

Series #3: Nuclear Fuel Cycle June 2014 to August 2015

Webinar Topic	Attendance	Archived Viewings
Introduction to the Fuel Cycle	151	212
Front End--Uranium Mining, Milling, Enrichment and UO2 Production	211	128
Environmental and Human Contamination in the Front End of the Fuel Cycle for Uranium Mining and Milling	133	71
Nuclear Fuels and Fuel Fabrication	146	96
Overview of Nuclear Reactors	214	81
Chemistry and Radiochemistry of the Reactor Coolant System	137	78
The PUREX Process	166	86
Advanced Partitioning Technologies in the U.S.	155	21
Advanced Partitioning Technologies in Europe	80	23
Radiation Chemistry at the Back End of the Nuclear Fuel Cycle	128	25
Pyroprocessing Technology	42	27
Nuclear Waste Management-Application to Technetium	109	17
Nuclear Repository Science	109	13
High Level Waste	130	6

Mini-series 4: Current Topics of Interest September 2015 to November 2015

Webinar Topic	Attendance	Archived Viewings
High Resolution Gamma-Ray Spectrometry Analyses for Normal Operation and Radiological Incident Response	244	
Radiation Safety	296	
The Diverse Geologic Environments of Natural Uranium Resources	November 19	

Overall Summary Statistics

- 40 Webinars to Date
- Total Attendance 7174
- Average Attendance 180
- Archived Viewings 4766

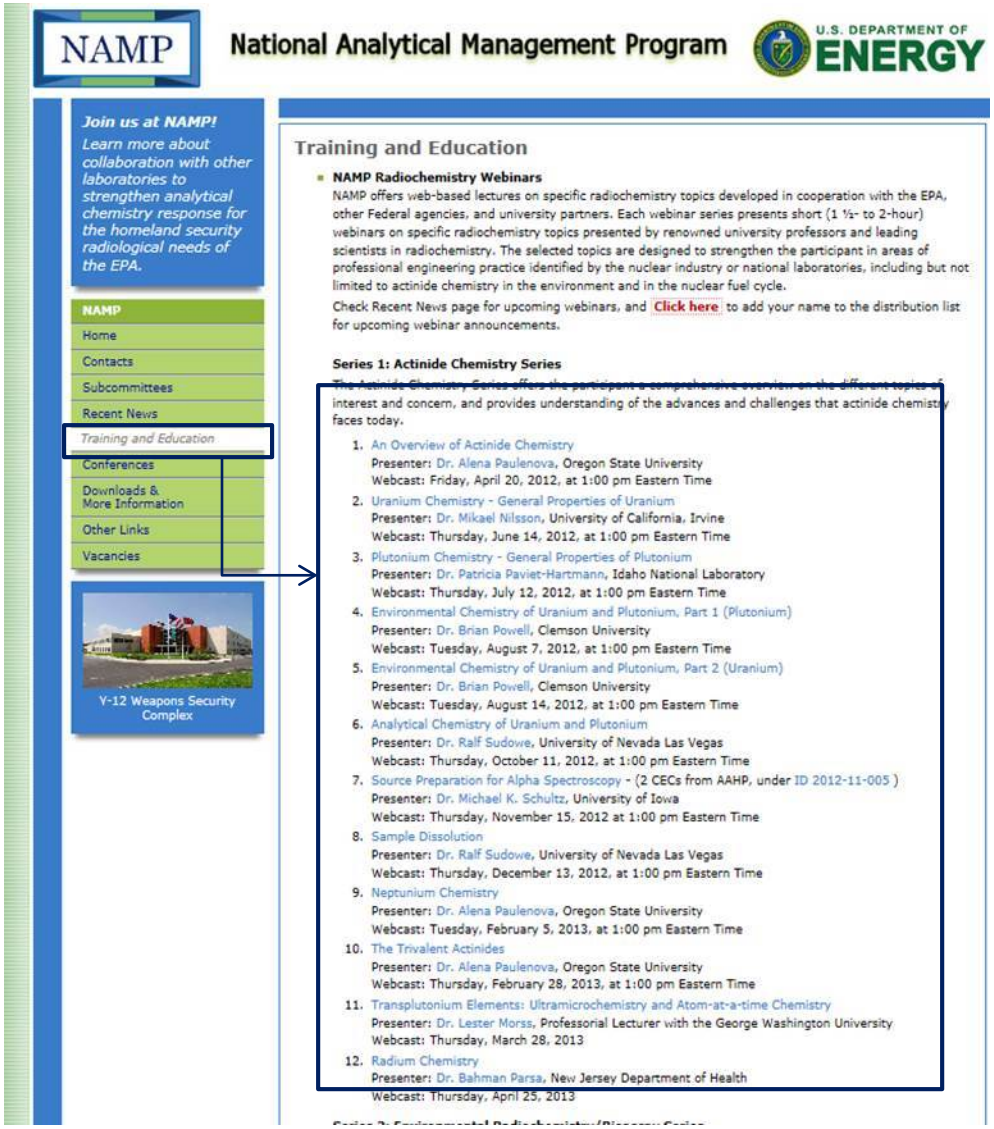
Upcoming Series 5—Nuclear Forensics

Webinar Title	Presenter	Tentative Date
Introduction	Dr. Walter Loveland, Oregon State University	December 2015
Nuclear Fission/Nuclear Devices	Dr. John McCLory, US Air Force Institute of Technology	January 2016
Uranium Resources	Dr. Lindsay Shuller-Nickles, Clemson University	February 2016
Chronometry	Dr. Michael Schultz, University of Iowa	March 2016
Sample Matrices and Collection, Sample Preparation	Dr. Amy Hixon, University of Notre Dame	April 2016
Nuclear Materials Analysis — Physical and Spectroscopic Methods	Dr. Jeff Terry, Illinois Institute of Technology	May 2016
Nuclear Materials Analysis — Chemical Methods	Dr. Brian Powell, Clemson University	June 2016
Nuclear Materials Analysis — Non-Destructive Analysis	Dr. Azaree T. Lintereur, University of Utah	July 2016
Nuclear Materials Analysis — Radioanalytical Methods	Dr. Alena Paulenova, Oregon State University	August 2016
Nuclear Materials Analysis — Mass Spectroscopy	Dr. Ken Marcus, Clemson University	September 2016
Development of Signatures	Dr. Kiel Holliday and Dr. Leonard Grey, Lawrence Livermore National Laboratory	October 2016
Statistics in Nuclear Forensics	Dr. Luther McDonald, University of Utah	November 2016
Source and Route Attribution	Dr. Jenifer Braley, Colorado School of Mines	December 2016
Case Studies Part 1	Dr. Lindsay Shuller-Nickles, Clemson University	January 2017
Case Studies Part 2	Dr. Timothy A. DeVol, Clemson University	January 2017

Archived Webinars

- Accessible online
  - Audio-video recording
  - Slide deck
  - Presenter information
  - Keyword: NAMP+Webinar

www.wipp.energy.gov/namp



American Academy of Health Physics Continuing Education Credits

- Source Preparation for Alpha Spectroscopy
  Dr. Michael K. Schultz
  University of Iowa

- Verification and Validation of Radiological Data for Use in Waste Management and Environmental Remediation
  Dr. Thomas Rucker
  Leidos

- Alpha Spectroscopy
  Dr. Ralf Sudowe
  University of Nevada Las Vegas

NAMP

Certificate of Attendance

Awarded to

Savannah River National Laboratory

Berta Oates

National Analytical Management Program (NAMP)

2-Hour Radiochemistry Webinars

High Resolution Gamma-Ray Spectrometry Analyses for Normal Operation and Radiological Incident Response

Presented by Dr. Robert Litman, EMS

9/24/2015

Cecilia DiPrete, MS
Savannah River National Laboratory

Mansour Akbarzadeh
NAMP Education and Training Subcommittee

John Griggs, PhD
U.S. Environmental Protection Agency

Patricia Paviet, PhD
NAMP Education and Training Subcommittee

NWP

PORTAGE
Carlsbad Field Office Technical Assistance Contractor

Webinar Attendee Comments

"I appreciate if you can send copy of the presentations as attached to the desired participants emails. It is good initiative to gather scientists from radiochemistry community world-wide to refresh their knowledge in such ease and advanced way."

"This is the most applicable talk to my work that I have heard so far, and I can really use the information they are providing."

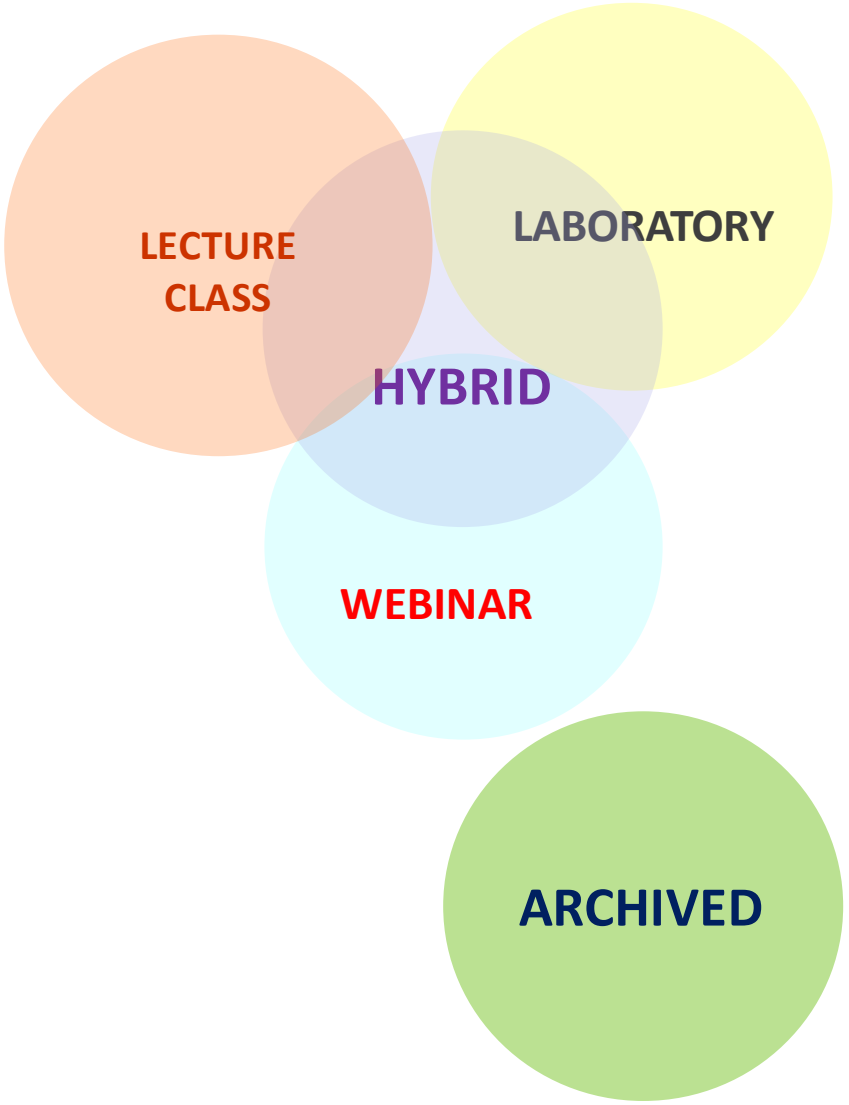
"Thank you for providing another great webinars! I've been getting caught up on some of the older ones and they are proving to be very useful."

"Only criticism - too much info too fast! providing a copy of the presentation was the cure."

"I thought it was very interesting. The material is not often presented in other than a graduate school setting so many of us don't have access to it; other than from books. Thank you for making it possible."

Conclusion: Future in Education

- Webinars are very successful and demonstrate the need for such resources to maintain the U.S. level of expertise in radiochemistry
- Attendance and positive feedback reflect a renewed interest in radiochemistry
- Archived webinars available to public online



Thank You

For more information, visit the NAMP website at www.wipp.energy.gov/namp