NUCL

DIVISION OF NUCLEAR CHEMISTRY & TECHNOLOGY

Final Program, 226th ACS National Meeting, New York, NY, September 7-11, 2003

S. C. Srivastava, Program Chair

OTHER SYMPOSIA OF INTEREST:

Biogeochemistry of Chelating Agents (see ENVR, Sun, Mon, Wed)

Targeting Chemical and Biological Warfare Agents (see ENVR, Tue, Wed)

Advanced Analytical Techniques for Homeland Security (see ANYL, Tue)

New Highlights in Scanning Electrochemical Microscopy (see ANYL, Thu)

Bioinorganic Chemistry (see INOR, Sun, Mon)

Environmental: Poster (see INOR, Sun)

Medicinal Inorganic Chemistry (see INOR, Tue, Wed, Thu)

Targeting Protein-Protein Interactions (see MEDI, Wed)

Issues of Homeland Security: What Can Chemists Do? (see PRES, Thu)

SOCIAL EVENTS:

Executive Committee Meeting: Sun
Social Hour: Mon

BUSINESS MEETING: Mon

SUNDAY MORNING

Section A
Javits Convention Center -- 1A15/1A16

Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society Homeland Security/Safeguards
Cosponsored with ANYL
K. W. Thomas, Presiding
S. C. Scarpitta, T. M. Semkow, G. J. Wozniak, and K. W. Thomas, Organizers


10:25 — Intermission.


**SUNDAY AFTERNOON**

**Section A**

**Javits Convention Center -- 1A15/1A16**

**Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society Regulatory/Gamma Spec**

_Cosponsored with ANYL_

T. M. Semkow, Organizer, Presiding
S. C. Scarpitta, G. J. Wozniak, and K. W. Thomas, Organizers

1:30 — 9. Overview of results from NPL’s environmental radioactivity comparison exercises. **S. M. Jerome**

1:55 — 10. Naturally occurring radioactive material (NORM) in Europe: An overview. **F. Schönhofer**


3:20 — Intermission.

3:30 — 14. Ultra low background techniques applied on a grand scale. **H. S. Miley**

3:55 — 15. Low-background gamma spectroscopy of natural decay chain activity at the microBq/kg level. **G. Heusser**
4:20 — 16. Theoretical studies of background induction in HPGe gamma spectrometers. P. Vojtyla

4:45 — 17. Activity calculations in gamma-ray spectrometry. M. A. Korun

MONDAY MORNING
Section A
Javits Convention Center -- 1A15/1A16

Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society
Water/Monitoring
Cosponsored with ANYL
M. K. Schultz, Presiding
S. C. Scarpitta, T. M. Semkow, G. J. Wozniak, and K. W. Thomas, Organizers

9:00 — 18. Gamma spectrometry of environmental radioactivity with special emphasis to drinking water. P. Parekh, D. Haines, A. Bari, M. Torres, T. M. Semkow


10:30 — Intermission.

10:40 — 22. Where is the "missing" plutonium? Intertidal radionuclide inventories, NE Irish Sea, UK. D. G. Jones, M. H. Strutt


11:20 — 24. Changes in environmental radioactivity due to TENORM in Romania. E. G. Botezatu


Section B
Javits Convention Center -- 1A19/1A20

Recent Developments in Targets and Chemistry for Isotope Production
Cosponsored with INOR
D. J. Schlyer, Presiding
L. F. Mausner and D. J. Schlyer, Organizers

9:00 — 26. Challenges encountered in re-establishment of radionuclide production at MSKCC. R. D. Finn


10:30 — Intermission.


**MONDAY AFTERNOON**

Section A

Javits Convention Center -- 1A15/1A16

Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society

**Monitoring/Mass Spec/Methods**

*Cosponsored with ANYL*

**M. E. Kitto,** *Presiding*

S. C. Scarpitta, T. M. Semkow, G. J. Wozniak, and K. W. Thomas, *Organizers*

1:30 — 32. Plutonium reduction on synthetic magnetite (Fe₃O₄) and hematite (α-Fe₂O₃). **B. A. Powell**, R. A. Fjeld, D. I. Kaplan, J. T. Coates


2:30 — 35. Determination of low-level radionuclides in environmental samples by mass spectrometry at the Savannah River Technology Center. **D. M. Beals**


3:15 — Intermission.


3:45 — 38. Low-level liquid scintillation spectrometry in environmental monitoring. **F. Schönhofer**


4:30 — 40. Understanding the gross alpha calibration curve. **H. W. Jeter**

Section B
Javits Convention Center -- 1A19/1A20

Recent Developments in Targets and Chemistry for Isotope Production
Cosponsored with INOR
L. F. Mausner, Organizer, Presiding
D. J. Schlyer, Organizer


2:00 — 43. Design considerations for high power gas targets: Part II. K. Buckley, S. Lapi, J. Publicover, **T. J. Ruth**, S. Jivan

2:30 — 44. Chemical separation of Pd-103 from irradiated rhodium targets. **K. L. Kolsky**, B. L. Zhuikov

2:50 — 45. Copper-64 labeled RGD peptide for PET imaging of tumor angiogenesis. **X. Chen**, J. R. Bading, P. S. Conti

3:10 — Intermission.

3:30 — 46. Producing the radionuclide I-123 for needs of nuclear medicine. **S. Kushnazarov**, U. Asatov


TUESDAY MORNING
Section A
Javits Convention Center -- 1A15/1A16

Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society
Environmental Radioactivity
Cosponsored with ANYL
S. C. Scarpitta, Organizer, Presiding
T. M. Semkow, G. J. Wozniak, and K. W. Thomas, Organizers

8:30 — 49. Radioactivity as tracer of environmental processes. **C. Papastefanou**

8:55 — 50. Climatic and geologic controls on the distribution and variability of radionuclides in rocks, soil, water, and air. **L. C. S. Gundersen**


9:40 — 52. Radon and radium isotopes as tracers in the coastal ocean. **W. C. Burnett**

10:05 — Intermission.


**Section B**
**Javits Convention Center -- 1A19/1A20**

**Additional Aspects of Nuclear Chemistry**
**S. C. Srivastava, Organizer, Presiding**

8:30 —58. Use of a digital signal processing system for neutron inelastic gamma ray spectroscopy. **S. Mitra**, L. Wielopolski, G. R. Hendrey


9:10 —60. Precipitation of barium/strontium nitrates during reprocessing of spent nuclear fuels. **M. J. Quayle**, T. R. Ward


10:30 — Intermission.

64. Withdrawn.


11:30 —67. Spectroscopic study of uranyl-doped glasses. **Z. Li**, S. M. Mahurin, **S. Dai**

**TUESDAY AFTERNOON**
**Section A**
**Javits Convention Center -- 1A15/1A16**

**Environmental Radioactivity and Low-background Radioactivity Monitoring in Service to the Society**
**Radon/Models**
**Cosponsored with ANYL**
**W. C. Burnett, Presiding**
**S. C. Scarpitta, T. M. Semkow, G. J. Wozniak, and K. W. Thomas, Organizers**
1:30 — 68. Progress in mapping radon flux and its variation over the Earth's surface. S. D. Schery


3:00 — 72. The contribution of complex nuclei to the effective dose of air crew at flight levels greater than 40,000 feet. E. Felsberger, K. O’Brien

3:20 — Intermission.


3:55 — 74. Limits of detection in the third millennium. S. M. Jerome

4:15 — 75. Bounds for confidence intervals for paired counting when there is uncertainty about the expected blank count. W. E. Potter

4:35 — 76. Relationship between the radioactive decay law and nuclear statistics. T. M. Semkow

WEDNESDAY MORNING
Section A
Javits Convention Center -- 1A15/1A16

Environmental Management Science Program on Nuclear Waste Management
Characterization, Monitoring, and Analysis Techniques
Cosponsored with ANYL
M. Connolly, Presiding
T. Zachry, Organizer

8:30 — Introductory Remarks.

8:40 — 77. Fluorophores as chemosensors for Sr$^{2+}$ and Cs$^+$ based on calix[4]arenes and coumarin reporter groups. G. Goretzki, G. M. Brown, P. V. Bonnesen

9:00 — 78. A new method for in situ characterization of important actinides via surface-enhanced Raman spectroscopy (SERS). S. Dai, L. Bao, S. M. Mahurin


10:00 — Intermission.


10:45 — 82. Acoustic monitor for solid-liquid slurries measurements at low weight fractions. L. L. Tavlarides, O. Shcherbakov, E. Dievendorf, A. Sangani

11:25 — 84. Novel chemical detection strategies for TCE and PCE. **A. C. R. Pipino**

11:45 — Concluding Remarks.

**WEDNESDAY AFTERNOON**

**Section A**

**Javits Convention Center -- 1A15/1A16**

**Environmental Management Science Program on Nuclear Waste Management**

**Separations Chemistry and Technology**

_Cosponsored with ANYL_

R. Hirsch, _Presiding_

T. Zachry, _Organizer_

1:30 — Introductory Remarks.


2:00 — 86. Supercritical fluid extraction of radionuclides - A green technology for nuclear waste management. **C. M. Wai**

2:20 — 87. Fundamental chemistry of the universal extractant (UNEX) for the simultaneous separation of major radionuclides (cesium, strontium, actinides, and lanthanides) from radioactive wastes. **R. S. Herbst**, D. R. Peterman, T. A. Luther, V. A. Babai, I. V. Smirnov, E. S. Stoyanov


3:00 — Intermission.


4:45 — Concluding Remarks.
THURSDAY MORNING
Section A
Javits Convention Center -- 1A15/1A16

Environmental Management Science Program on Nuclear Waste Management
Facility Inspection, Decontamination, & Decommissioning; Materials Science
Cosponsored with ANYL
E. Berkey, Presiding
T. Zachry, Organizer

8:30 — Introductory Remarks.

8:40 — 93. Serpentine robots for inspection tasks. H. Choset

9:00 — 94. Investigation of nanoparticle formation during surface decontamination and characterization by pulsed laser. M. Cheng, D. Lee, B. Gu

9:20 — 95. Plasma technologies for detection and removal of transuranic elements from contaminated sites. X. Yang, S. Babayan, M. Moravej, G. Nowling, R. Hicks


10:00 — Intermission.


10:45 — 98. Radiation effects in zeolites and clays for the sorption and release of radionuclides during transport through the geosphere. L. Wang, R. C. Ewing, K. F. Hayes


11:45 — Concluding Remarks.

Issues of Homeland Security: What Can Chemists Do?
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THURSDAY AFTERNOON
Section A
Javits Convention Center -- 1A15/1A16

Environmental Management Science Program on Nuclear Waste Management
Modeling and Waste Treatment Chemistries
Cosponsored with ANYL
P. Wang, Presiding
T. Zachry, Organizer
1:30 — Introductory Remarks.


2:00 — 102. Modified associate species thermochemical model of high-level nuclear waste glass compositions. T. M. Besmann, N. Kulkarni, K. E. Spear, J. D. Vienna


2:40 — 104. Development of an aqueous thermodynamic model for the Tc(IV) - Na⁺ - OH⁻ - H₂O - gluconate system under basic conditions: Implications for HLW pretreatment at the Hanford Site. N. J. Hess, Y. X. Xia, A. R. Felmy

3:00 — Intermission.


4:05 — 107. Speciation, dissolution, and redox reactions of chromium relevant to pretreatment and separation of high-level wastes. D. Rai, L. Rao, S. B. Clark, N. J. Hess


4:45 — Concluding Remarks.