LALP-97-140

Plutonium Futures—The Science

Topical Conference on Plutonium and Actinides

Santa Fe, New Mexico (USA)

August 25–27, 1997

Sponsored by
Los Alamos National Laboratory
in cooperation with the
American Nuclear Society

Pu Futures '97

Los Alamos
NATIONAL LABORATORY

Conference Program

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Plutonium Futures—The Science Conference

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Technical divisions of the American Nuclear Society cosponsoring this conference are:
Isotopes and Radiation Division
Material Science and Technology Division
Fuel Cycles and Waste Management Division
Biology and Medicine Division
Education and Training Division
Environmental Sciences Division

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LALP-97-140
August 1997

Plutonium Futures—The Science

Conference Program

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Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

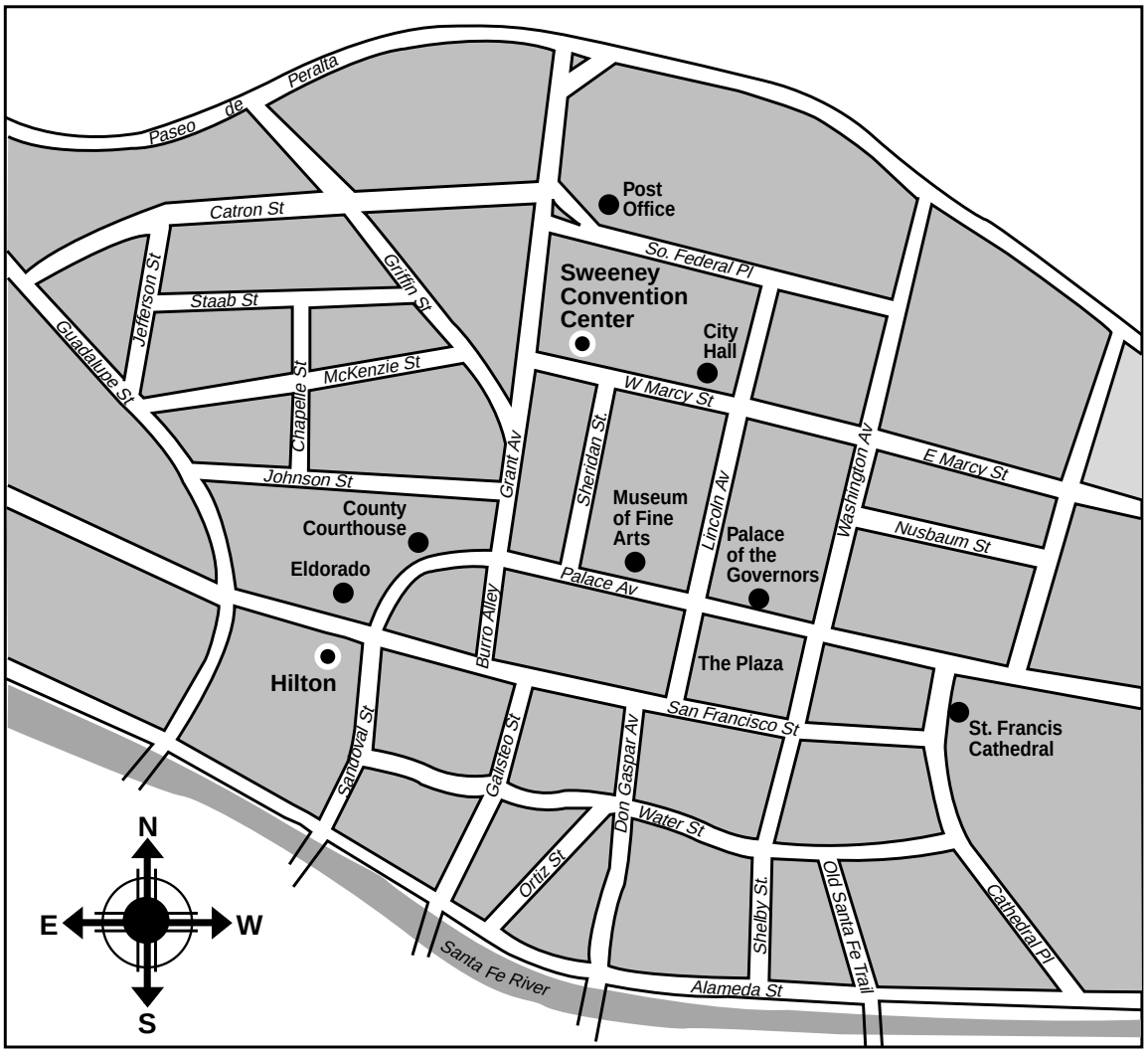
Daily Meeting Schedule for the Plutonium Futures—The Science Conference

	Sunday August 24	Monday August 25	Tuesday August 26	Wednesday August 27
7:00 a.m.		7 a.m. Registration Promenade		
8:00 a.m.			8–10 a.m. Technical Session– Nuclear Fuels/Isotopes Mesa Ballroom	8–10 a.m. Technical Session– Actinides in the Environment Mesa Ballroom
9:00 a.m.		8:30–11:45 a.m. Plenary Session Mesa Ballroom		
10:00 a.m.			10:15–12:15 p.m. Technical Session– Separations Mesa Ballroom	10:15–12:15 p.m. Technical Session– Detection and Analysis Mesa Ballroom
11:00 a.m.				
12:00 noon		11:45–1:30 p.m. Lunch buffet (provided) Mesa Ballroom	12:15 p.m. lunch (on your own)	12:15 p.m. lunch (on your own)
1:00 p.m.				
2:00 p.m.		1:30–3:00 p.m. Technical Session– Materials Science Mesa Ballroom	2:00–5:30 p.m. Poster Session Sweeney Center	1:45–3:15 p.m. Technical Session– Plutonium Mesa Ballroom
3:00 p.m.		3:15–5:15 p.m. Technical Session– Transuranic Waste Forms Mesa Ballroom		3:30–4:30 p.m. Technical Session– Actinide Compounds and Complexes Mesa Ballroom
4:00 p.m.				4:30 p.m. Rapporteur Mesa Ballroom
5:00 p.m.		5:30–7 p.m. dinner (on your own)		5:00 p.m. Conference Close Mesa Ballroom
6:00 p.m.	6–8 p.m. Reception and Registration Chamisa Courtyard		6:15 p.m. Banquet Mesa Ballroom	
7:00 p.m.		7:00 p.m. Plenary Panel Session with Audience Participation Mesa Ballroom		
8:00 p.m.				

Downtown Santa Fe, New Mexico, USA

Hilton Hotel
100 Sandoval
988-2811

Sweeney Convention Center
201 W. Marcy
984-6760



Santa Fe Hilton Hotel

HIlton Hotel
100 Sandoval
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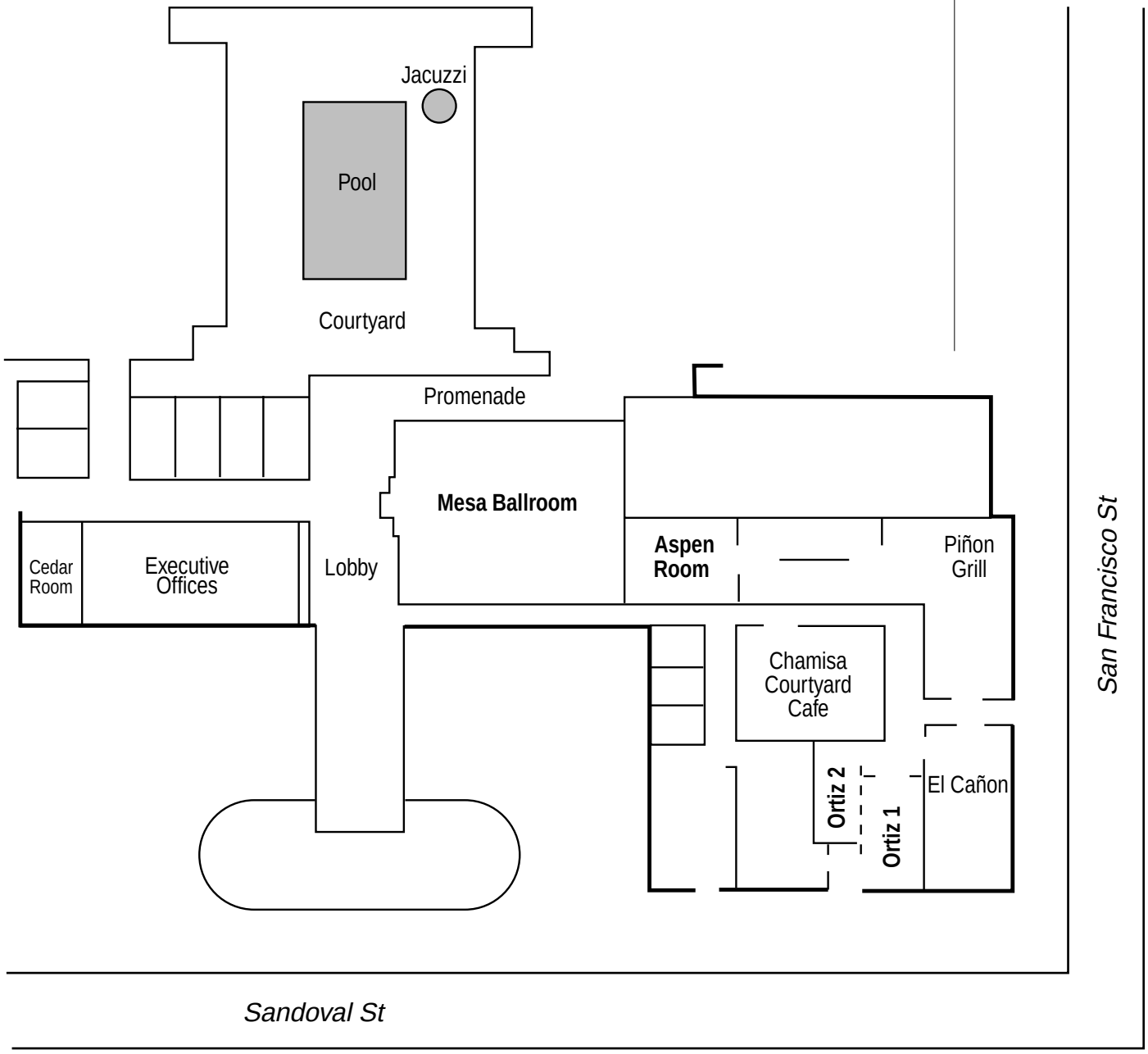

The following exhibits will be displayed in the Aspen and Ortiz rooms during the conference:

- **Plutonium Exhibit—Savannah River Site**
- **The Glenn T. Seaborg Institute for Transactinium Science**
- **The Lovelace Respiratory Research Institute**
- **Los Alamos National Laboratory's Plutonium Capabilities and Technologies**
- **Plutonium Focus Area—DOE Idaho Operation Office**

Sweeney Convention Center

Sweeney Convention Center
201 W. Marcy
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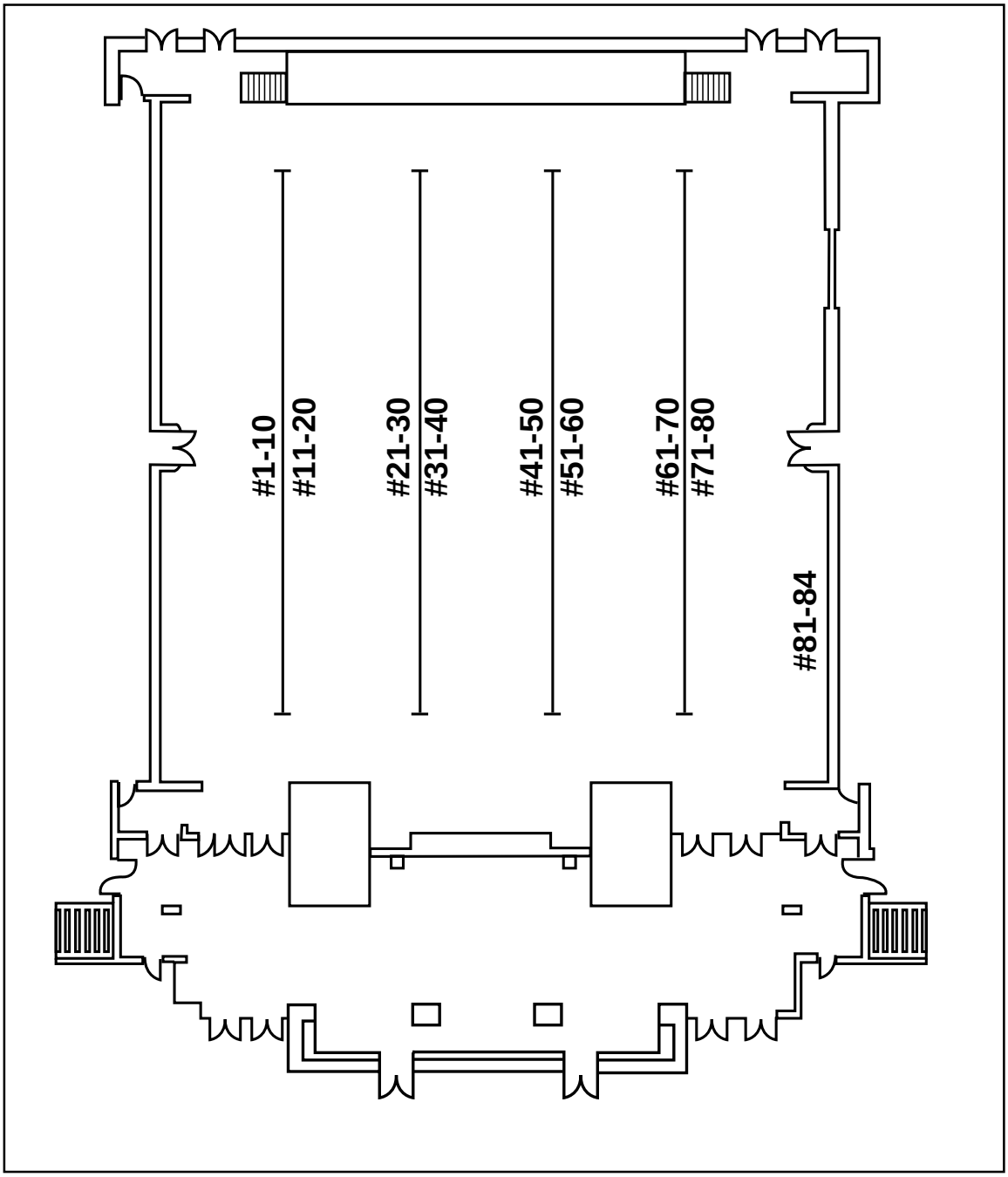
Poster Session
Tuesday, August 26
2:00–5:30 p.m.



Final Program
for the Plutonium Futures—The Science Conference

Sunday, August 24, 1997

6–8 p.m.	**Registration and Reception** Hilton, Chamisa Courtyard

Monday, August 25, 1997

7 a.m.	**Registration** Hilton, Promenade
Plenary Session	Session Co-Chairs: R. Bruce Matthews and Paul Cunningham Hilton, Mesa Ballroom
8:30 a.m.	**Opening Statement and Program Overview** Dr. Paul Cunningham (Los Alamos National Laboratory)
8:35 a.m.	**Welcome,** Dr. Sig Hecker (Los Alamos National Laboratory)
8:50 a.m.	**SEABORG and PLUTONIUM: Retrospective and Perspective**
9:30 a.m.	**Options for Plutonium Utilization: Sustainable Energy Development, Safeguards, and Nuclear Safety** Dr. Victor M. Mourogov (International Atomic Energy Agency)
10:00 a.m.	**Break** Refreshments in the Promenade
10:15 a.m.	**The Role of Plutonium in Energy Production Outside the United States** Dr. Alan Waltar (Advanced Nuclear and Medical Systems)
10:45 a.m.	**Activists, Scientists, Operators–Is There a Common Ground?** Dr. Daniel Kerlinsky (University of New Mexico)
11:15 a.m.	**Opportunities in Transactinium Science** Dr. Darleane Hoffman (Lawrence Berkeley National Laboratory)
11:45 a.m.	**Lunch** Hilton, Mesa Ballroom, New Mexican buffet **Several exhibits** can be seen in the Aspen and Ortiz 1 and 2 siderooms during lunch and all conference breaks
Materials Science	Session Chair: Rodney Ewing, University of New Mexico Hilton, Mesa Ballroom
1:30 p.m.	**Materials Science of Plutonium and Americium with Group IV Elements: Compounds and Solid Solution Relevant to Nuclear Applications** P. E. Raison,* R. G. Haire,* T. Sato,† T. Ogawa† (*Oak Ridge National Laboratory, †JAERI, Japan)
2 p.m.	**Thermochemistry of Crystalline and Amorphous Phases Related to Plutonium Containment** A. Navrotsky (UC Davis)
2:30 p.m.	**Point Defects in the Solid Solutions of Actinide Oxides (M, An)O_{2+x} and Properties of Fuels (An=Np, Pu, Am, or Cm)** M. Beauvy, C. Duriez, T. Gervais, J. Larroque, J. M. Bonnerot (Commissariat a l'Energie Atomique, France)
3 p.m.	**Break** Refreshments in the Promenade
Transuranic Waste Forms	Session Chair: J. M. (Mal) McKibben, Westinghouse Savannah River Company Hilton, Mesa Ballroom
3:15 p.m.	**Immobilisation of Pu-Rich Wastes in Synroc** E. R. Vance,* A. Jostsons,* M. W. A. Stewart,* R. A. Day,* B. D. Begg,* M. J. Hambley,* K. P. Hart,* B. B. Ebbinghaus† (*ANSTO, Australia, †Lawrence Livermore National Laboratory)

3:45 p.m.	**Amorphous Zirconium Hydrosilicate (AZHS)—A Prospective Material for Pu Fixation** B. E. Burakov,* K. B. Helean†, E. B. Anderson,* R. C. Ewing,† A. F. Smetannikov* (*V. G. Khlopin Radium Institute, Russia, †University of New Mexico)
4:15 p.m.	**New Ceramics for Tetravalent Actinides: $Th_4(PO_4)_4P_2O_7$. Leaching Tests for U^{4+} and Pu^{4+}** N. Dacheux, R. Podor, V. Brandel, J. F. LeDû, B. Chassigneux, M. Genet (Nuclear Physics Institute, France)
4:45 p.m.	**Self-Radiation Effects in Glass and Ceramic Waste Forms for the Stabilization and Disposition of Plutonium** W. J. Weber,* N. J. Hess,* S. D. Conradson,† J. D. Vienna* (*Pacific Northwest National Laboratory †Los Alamos National Laboratory)
5:30–7:00 p.m.	**Dinner** (on your own)
7:00 p.m.	**Plenary Session Speakers Panel with audience participation** Mesa Ballroom

Tuesday, August 26, 1997

Nuclear Fuels/ Isotopes	Session Chair: Larry Newkirk, Lawrence Livermore National Laboratory Hilton, Mesa Ballroom
8 a.m.	**Nuclear Pu-Based Fuels for the Future** H. Bernard (French Atomic Energy Commission)
8:30 a.m.	**Concepts for Advanced MOX Fabrication Technology** W. Stoll (Institute for Industrial Environment, Germany)
9 a.m.	**Fabrication of CANDU MOX Fuel at AECL** F. C. Dimayuga (AECL, Canada)
9:30 a.m.	**Development of Coated Particle Plutonium Fuel in Russia** V. M. Makarov,* A. S. Shenoy,† M. B. Richards,¥ D. W. McEachern¥ (*A. A. Bochvar All-Russian Scientific Research, Russia, †General Atomics, San Diego, ¥General Atomics, Los Alamos)
10 a.m.	**Break** Refreshments in the Promenade
Separations	Session Chair: Gordon Jarvinen, Los Alamos National Laboratory Hilton, Mesa Ballroom
10:15 a.m.	**Recovery of Plutonium or Conversion of Plutonium Containing Materials to Glass Using a GMODS Dissolution Glass** C. W. Forsberg (Oak Ridge National Laboratory)
10:45 a.m.	**Recovery of Surplus Weapons-Usable Plutonium for Mixed Oxide Reactor Fuels** T. R. Johnson, R. D. Pierce, C. C. McPheeters (Argonne National Laboratory)
11:15 a.m.	**Aqueous Processes for the Conversion of Metallic Plutonium into an Oxide Powder Suitable for MOX Fuel Fabrication** B. Zakharkin,* L. Borisov,* P. Brossard,† P. Bros,† A. Boesch,¥ E. Capelle¥ (*VNIIM, Russia, †CEA / DCC, France, ¥CEA / DAM, Bruyère-Le-Châtel, France)
11:45 a.m.	**Magnetic Separation for Nuclear Material Applications** L. A. Worl, D. Hill, D. Padilla, C. Prenger, E. Roth (Los Alamos National Laboratory)
12:15 p.m.	**Lunch** (on your own in Santa Fe)
Poster Session 2–5:30 p.m.	Session Chair: Major Thompson, Westinghouse Savannah River Company Sweeney Center (within walking distance of the Hilton Hotel), posters listed on page 13
6:15 p.m.	**Banquet** Invited Speaker: Richard Rhodes, *Public Health, Public Knowledge, Public Peace* Author of *The Making of the Atomic Bomb* and *Dark Sun–The Making of the Hydrogen Bomb* Hilton, Mesa Ballroom

Wednesday, August 27, 1997

Actinides in the Environment	Session Chair: Ann Gibbs, Westinghouse Savannah River Company Hilton, Mesa Ballroom
8 a.m.	**Actinides in the Environment: Some Perspectives from an Aqueous Chemist** J. Bruno (QuantiSci SL, Spain)
8:30 a.m.	**Investigations of Microbial Systems in Radioactive Environments** M. E. Pansoy-Hjelvik,* B. A. Strietelmeier,* J. B. Gillow,† C. J. Dodge,† R. J. Sebring,* S. M. Kitten,* P. A. Leonard,* R. Villarreal,* I. R. Triay,* A. J. Francis,† H. W. Papenguth¥ (*Los Alamos National Laboratory, †Brookhaven National Laboratory, ¥Sandia National Laboratories)
9 a.m.	**Mediation of Actinide Mobility and Potential Actinide Remediation by Microbes in the Environment** J. R. Brainard, S. Thompson, L. Hersman (Los Alamos National Laboratory)
9:30 a.m.	**Actinide Solubility and Speciation in YM and WIPP Aquifers: Experimental Data and Predictions Based on Thermodynamic and Geochemical Modeling** D. R. Janecky,* D. W. Efurd,* C. D. Tait,† W. Runde† (*Los Alamos National Laboratory, †Glenn T. Seaborg Institute for Transactinium Science, CA)
10 a.m.	**Break** Refreshments in the Promenade
Detection and Analysis	Session Chair: Larry Avens, Los Alamos National Laboratory Hilton, Mesa Ballroom
10:15 a.m.	**Advantages and Limitations of Oxidation State Analogs** G. R. Choppin (Florida State University)
10:45 a.m.	**Spectroscopic Study of Chelation Between Pu and Modified Siderophores** P. Zhao,* V. V. Romanovski,* D. C. Hoffman,* C. E. A. Palmer,* D. W. Whisenhunt, Jr.,* P. G. Allen,† D. K. Shuh,† J. J. Bucher,† N. M. Edelstein,† D. J. White,¥ J. Xu,¥ K. N. Raymond¥ (*G. T. Seaborg Institute for Transactium Science, Lawrence Livermore National Laboratory, †Lawrence Berkeley National Laboratory, ¥University of California, Berkeley)
11:15 a.m.	**Immobilization of Plutonium in Geomedia by Phytic Acid** M. P. Jensen, S. R. Friedrich, J. J. Hines, M. A. Schmidt, K. L. Nash (Argonne National Laboratory)
11:45 a.m.	**Characterization of Actinide Materials by Elemental and Molecular Imaging** G. J. Havrilla,* J. R. Schoonover,* F. Wesner,* C. Worley,* M. Sparrow,† P. J. Treado† (*Los Alamos National Laboratory, †University of Pittsburgh)
12:15 a.m.	**Lunch** (on your own in Santa Fe)
Plutonium	Session Chair: Richard Bartsch, Texas Tech University Hilton, Mesa Ballroom
1:45 p.m.	**Electron Localization in the Series of Actinide Metals and Pu_3X (X=Al, Ga, In, Tl) Compounds** M. Pènicaud (Commissariat a l'Energie Atomique, France)
2:15 p.m.	**Coordination Chemistry of Actinide Ions (U, Np, Pu) Under Highly Alkaline Conditions** D. L. Clark, S. D. Conradson, D. W. Keogh, M. P. Neu, P. D. Palmer, R. D. Rogers, W. Runde, B. L. Scott, C. D. Tait (Los Alamos National Laboratory and Glenn T. Seaborg Institute for Transactinium Science, CA)
2:45 p.m.	**Polymeric Plutonium(IV) Hydroxide: Formation, Prevalence, and Structural and Physical Characteristics** M. P. Neu,* R. K. Schulze,* S. D. Conradson,* J. D. Farr,* R. G. Haire† (*Los Alamos National Lab and Glenn T. Seaborg Institute for Transactinium Science, CA, †Oak Ridge National Lab)
3:15 p.m.	**Break** Refreshments in the Promenade

Actinide Compounds and Complexes	Session Chair: Darleane Hoffman, Lawrence Berkeley National Laboratory Hilton, Mesa Ballroom
3:30 p.m.	**The Los Alamos Tunable Light Source for Transuranic Photoelectron Spectroscopy: First Results for δ-Pu** A. J. Arko, J. J. Joyce, L. E. Cox (Los Alamos National Laboratory)
4 p.m.	**The Actinide Extraction Properties of 1,3 Para-Tert-Butyl-Acid-Diethyl Amide Substituted Calix[4]arene** G. P. Nicholson,* M. J. Kan,* G. Williams,* P. D. Beer,† P. Schmidt,† M. G. B. Drew,¥ P. D. Sheen¥ (*AWE, Aldermaston, †University of Oxford, ¥University of Reading; UK)
4:30 p.m.	**Conference Summary and Assessment** Rapporteur: G. R. Choppin (Florida State University)

Poster Session Presentations

Sweeney Convention Center (within walking distance of the Hilton Hotel)

Materials Science

1 The Activities of V. G. Khlopin Radium Institute, Russia, in the Field of Pu and Actinide Immobilization
E. B. Anderson (V. G. Khlopin Radium Institute, Russia)

2 Calculated Structural Relaxation in Pu-Ga
J. D. Becker,* B. R. Cooper,† J. M. Wills,* L. Cox* (*Los Alamos National Laboratory, †West Virginia University)

3 Electronic Structure and Theory of Bonding in δ-Pu
O. Eriksson, J. M. Wills (Los Alamos National Laboratory)

4 Gallium Interactions with Zircaloy Cladding
R. R. Hart,* J. Rennie,* K. Ünlü,† C. Ríos-Martínez† (*Texas A&M University, †The University of Texas at Austin)

5 Synthesis and Characterization of Solids in the $Na_{1-x}K_xCe_{2-y}U_y(PO_4)_3$ System
H. T. Hawkins,* D. K. Veirs,* J. A. Danis,* W. H. Runde,* B. E. Scheetz†
(*Los Alamos National Laboratory, †The Pennsylvania State University)

6 Hot Isostatic Pressing (HIP) Synthesis of Pu-bearing Zircon
J. Y. Huang, D. R. Spearing (Los Alamos National Laboratory)

7 Phase Separation in Borosilicate Glasses with P, F, and S and the Influence on Glass Durability in Aqueous Environments
H. Li, Y. L. Chen, J. D. Vienna (Pacific Northwest National Laboratory)

8 Dissolution Studies of Plutonium Oxide in LaBS Glass
D. Riley,* W. Bourcier,* J. Vienna,† T. Meaker,† D. Peeler,¥ J. Marra¥ (*Lawrence Livermore National Laboratory, †Pacific Northwest National Laboratory, ¥Westinghouse Savannah River Co.)

9 Schoepite Weathering in the Presence of Calcium and Phosphate Bearing Water: Pathways and Products
A. G. Sowder,* S. B. Clark,† R. A. Fjeld* (*Clemson University, †Washington State University)

10 Alpha Radiation Damage in Plutonium Encapsulating Materials
K. Ünlü,* M. Saglam,* C. Ríos-Martínez,* R. R. Hart,† J. D. Shipp†
(*The University of Texas at Austin, †Texas A&M University)

11 Development of a Ceramic Form for Immobilization of Excess Plutonium
R. Van Konynenburg, B. Ebbinghaus, F. Ryerson, H. Shaw, P. Curtis
(Lawrence Livermore National Laboratory)

12 Glass and Glass-Ceramic Waste Forms Developed for Immobilizing Actinides
D. A. Knecht, S. Johnson, K. Vinjamuri, T. P. O'Holleran, S. Frank, S. V. Raman, B. A. Staples (Lockheed Martin Idaho Technologies, Argonne National Laboratory—West)

Transuranic Waste Forms

13 Waste Forms for Plutonium Disposition
S. G. Johnson,* T. P. O'Holleran,* S. M. Frank,* M. K. Meyer,* M. Hanson,* B. A. Staples,† D. A. Knecht,† P. C. Kong† (*Argonne National Laboratory—West, †Lockheed Martin Idaho Technologies Company)

14 The Raw Material and Waste Activity Balance in the Projected Nuclear Power of Russia
E. O. Adamov, I. Kh. Ganev, A. V. Lopatkin, V. G. Muratov, V. V. Orlov (Research and Development Institute of Power Engineering, Russia)

15 Statistical Signal Processing and Artificial Intelligence Applications in the Nondestructive Assay of U/Pu Bearing Materials
S. E. Aumeier, J. H. Forsmann (Argonne National Laboratory—West)

16 Pu and Gd Chemistry of Zirconolite Polytypes in a Titanate Ceramic
A. J. Bakel,* E. C. Buck,* B. Ebbinghaus† (*Argonne National Laboratory, †Lawrence Livermore National Laboratory)

17 Microwave Vitrification of Radioactive Sludge and Residue in Container
G. B. Borisov,* A. V. Nazarov,* M. N. Molokhov† (*A. A. Bochvar All-Russia Research Institute of Inorganic Materials, [VNIINM] Russia, †Research and Development Institute of Construction Technology and Residues, [NIKIMT] Russia)

18 Microscopic Analysis of Pu-Contaminated Incinerator Ash: Implications for Immobilization
E. C. Buck (Argonne National Laboratory)

19 Redox of Plutonium and Cerium in Vitrified Wastes
J. G. Darab,* H. Li,* M. J. Schweiger,* J. D. Vienna,* P. G. Allen,† J. J. Bucher,† N. M. Edelstein,† D. K. Shuh† (*Pacific Northwest National Laboratory, †Lawrence Berkeley National Laboratory)

20 Plutonium Alteration Phases from Lanthanide Borosilicate Glass
J. A. Fortner, C. J. Mertz, D. C. Chamberlain, J. K. Bates (Argonne National Laboratory)

21 Alternative Technology of HLW and Plutonium Immobilization within Mineral-like Matrix by Means of Self-propagating High-temperature Synthesis (SHS)
E. M. Glagovsky, A. V. Kuprin (A. A. Bochvar All-Russia Research Institute of Inorganic Materials [VNIINM], Russia)

22 Los Alamos Plutonium Facility Newly Generated TRU Waste Certification
K. Gruetzmacher, A. Montoya, B. Sinkule, M. Maez (Los Alamos National Laboratory)

23 Americium/Curium Bushing Melter Drain Tests
T. M. Jones, B. J. Hardy, M. E. Smith (Westinghouse Savannah River Company)

24 Stabilization of Recovered Ash at the Lawrence Livermore National Laboratory
O. H. Krikorian, R. H. Condit (Lawrence Livermore National Laboratory)

25 Analytical Technology Development for Transuranic Waste Characterization
C. Mahan, D. Wayne, D. Figg, D. Cremers, A. Koskelo, R. Drake, Y. Duan, J. Olivares (Los Alamos National Laboratory)

26 Speciation and Surface Interactions of Actinides on Aged Ion-Exchange Resins
D. E. Morris, C. T. Buscher, A. R. Wheeler, R. J. Donohoe, C. D. Tait (Los Alamos National Laboratory)

27 Application of Freeze Drying Technology to Liquid TRU Waste Minimization
J. A. Musgrave,* D. W. Efurd,* J. C. Banar,* S. Boone,* R. A. Podkulski,† E. Renzi,† P. Stewart† (*Los Alamos National Laboratory, †BOC Edwards Calumatic)

28 Silica Gel Treatment for Stabilization of Plutonium
A. K. Nardova,* E. A. Filippov,* E. G. Kudriavtsev,† E. G. Dzekun,* K. K. Korchenkin,* A. N. Mashkin* (*Russian Research Institute for Chemical Technology, Russia, †Ministry for Atomic Energy of Russian Federation, Russia, *"Mayak" Production Association)

29 Vitrification of Rocky Flats Incinerator Ash
T. S. Rudisill, J. C. Marra, D. K. Peeler (Westinghouse Savannah River Company)

30 Integrated Nondestructive Assay Solutions for Plutonium Measurement Problems for the 21st Century
T. E. Sampson, T. L. Cremers (Los Alamos National Laboratory)

31 Stabilization of Plutonium Contaminated Wet Combustible Residues
N. C. Schroeder, M. Attrep, Jr., S. B. Williams (Los Alamos National Laboratory)

32 Colloids in TRU Waste Contaminated Saturated Brine
R. K. Schulze, M. P. Neu, J. D. Farr, S. D. Conradson (Los Alamos National Laboratory)

33 Solution of the Problem of Recovery Transuranium Elements from Basin-Storage of Radioactive Waste and Equipment of Plants
N. E. Shingarjov, A. S. Polyakov, L. S. Raginsky, I. V. Mukhin (A. A. Bochvar All-Russia Research Institute of Inorganic Materials [VNIINM] Russia)

34 The Waste Management System at the Los Alamos Plutonium Facility
K. Smith, A. Montoya, R. Wieneke, D. Wulff, C. Smith, K. Gruetzmacher (Los Alamos National Laboratory)

35 Glass Encapsulation Technology for Plutonium Bearing Wastes
J. D. Vienna,* M. L. Elliott,* H. Li,* J. K. Luey,* G. Veazey,† R. Nakaoka†
(*Pacific Northwest National Laboratory, †Los Alamos National Laboratory)

36 Cathodic-Arc Deposited Erbia for Molten Plutonium Containment in Casting Operations
B. P. Wood,* D. Soderquist,* A. Gurevitch,* K. Walter,* J. Treglio†
(*Los Alamos National Laboratory, †ISM Technologies, Inc.)

37 Hydrothermal Oxidation for Treatment of Plutonium Combustible Wastes
L. S. Worl, S. J. Buelow, L. Le, D. Padilla, J. Roberts (Los Alamos National Laboratory)

38 TRU Waste Segregation and Compaction
A. S. Wong, L. L. Jacobson, R. S. Marshall, A. P. Lovell (Los Alamos National Laboratory)

Isotopes/Nuclear Fuels

39 Concept of Utilizing Weapon-Grade Plutonium in Channel-Type Water-Graphite Reactors RBMK-1000
E. O. Adamov, V. K. Davidov, P. B. Kuznetsov, V. M. Panin, M. I. Rozhdestvenskyi, Yu M. Cherkashov (Research and Development Institute of Power Engineering [RDIPE], Russia)

40 Automation in Plutonium Processing Environments
M. Dinehart,* G. R. McKee,† M. Evans* (*Los Alamos National Laboratory, †Sandia National Laboratories)

41 The Application of Plasma-chemical Technology for the Manufacture of Homogeneous Oxide Mixture Aimed for the Production of Uranium-Plutonium Fuel
G. P. Khandorin, N. V. Dedov, E. N. Maly, V. A. Matyukha, V. G. Sapozhnikov (Siberian Group of Chemical Enterprises)

42 MOX Fabrication Experience at BELGONUCLEAIRE
J. van Vliet, E. Pelckmans, A. Vandergheynst (BELGONUCLEAIRE)

43 The AIDA/MOX 1 Program: Results of the French-Russian Study for Peaceful Use of W-Pu
N. N. Yegorov,* E. Koudriavtsev,* V. Poplavsky,† A. Polyakov,¥ X. Ouin,§ N. Camarcat, B. Sicard,** H. Bernard** (*MINATOM, Russia, †IPPE, Russia, ¥VNIINM, Russia, §Ministry of Industry, France, **CEA, France)

Separations

44 New Bifunctional Anion-Exchange Resins for Plutonium Separations
R. A. Bartsch,* J. S. Kim,* J. Nam,* S. F. Marsh,† G. D. Jarvinen† (*Texas Tech University, †Los Alamos National Laboratory)

45 Effects of Coprecipitation on Uranium and Plutonium Concentrations in Alkaline Salt Solutions
D. T. Hobbs (Westinghouse Savannah River Company)

46 Plutonium Purification from Americium by Vacuum Distillation Method when Heating by Electron Beam
G. P. Khandorin, V. M. Kondakov, E. N. Maly, V. G. Sapozhnikov, G. G. Shadrin, L. L. Ugrinsky (Siberian Group of Chemical Enterprises, Russia)

47 Conversion of Weapon-grade Plutonium into an Oxide Powder Suitable for MOX Fuel Manufacturing by a Pyrochemical Method
A. Osipenko,* A. Bychkov,* O. Skiba,* J. Lacquement,† JM. Adnet,† P. Brossard†
(*SSC RIAR, Russia, †CEA / DCC, France)

48 Solid/Gas Phase Catalytic Reduction for the Clean Separation of Gallium from Gallium Oxide/Plutonium Oxide
C. V. Philip, W. W. Pitt, Jr., K. Chung, R. G. Anthony (Texas A&M University)

49 Plutonium Solubility and Speciation Under Hydrothermal Waste Treatment Conditions
S. D. Reilly, M. P. Neu, W. H. Runde (Los Alamos National Laboratory)

50 Pu Sorption by the 1,2-Hydroxypyridinone Based Agents
V. V. Romanovski,* P. Zhao,* D. C. Hoffman,* D. W. Whisenhunt, Jr.,* D. White,† X. Jide,† K. N. Raymond† (*Lawrence Livermore National Laboratory, †University of California at Berkeley)

Environmental and Biosphere Chemistry

51 Plutonium in Damaged Nuclear Fuel at the Chernobyl NPP Accident
S. Bogatov, A. Borovoi, S. Gavrilov (Russian Research Centre "Kurchatov Institute")

52 Dose Formation from Transuraniums to the Population Living at the Chernobyl Alienation Zone
O. A. Bondarenko, B. B. Aryasov (Radiation Protection Institute, Ukraine)

53 Experimental and Modeling Studies of the Cycling of Plutonium in a Monomictic, Freshwater Reservoir
S. B. Clark, S. M. Loyland (Washington State University)

54 An Overview of the Redox, Aqueous, and Solid Phase Speciation of Uranium in the Drainage Water Evaporation Ponds of the San Joaquin Valley, California, USA
M. C. Duff,* C. Amrhein,† P. M. Bertsch,¥ D. B. Hunter,¥ D. E. Morris,* J. A. Musgrave*
(*Los Alamos National Laboratory, †University of California at Riverside, ¥University of Georgia's Savannah River Ecology Laboratory)

55 Human Health Issue for Combined Exposures to Plutonium and Chemicals: An Experimental Toxicology Approach
G. L. Finch, C. H. Hobbs, D. L. Lundgren, J. M. Benson, F. F. Hahn, K. J. Nikula, W. C. Griffith, M. D. Hoover, E. B. Barr, S. A. Belinski, B. B. Boecker, J. L. Mauderly
(Lovelace Respiratory Research Insitute)

56 Column Tests to Study Selected Mechanisms for Plutonium Transport in Sediment Interbed at the INEEL Site
R. A. Fjeld,* J. T. Coates,* A. W. Elzerman,* J. D. Navratil,† D. K. Jorgensen†
(*Clemson University, †Lockheed Martin Idaho Technologies Company)

57 Worker Protection Issues for Monitoring Airborne Plutonium
M. D. Hoover, G. J. Newton, B. R. Scott (Lovelace Respiratory Research Institute)

58 Batch Sorption Results for Americium, Neptunium, Plutonium, Technetium, and Uranium Transport Through the Bandelier Tuff, Los Alamos, New Mexico
P. Longmire, C. R. Cotter, I. R. Triay, J. J. Kitten, A. I. Adams (Los Alamos National Laboratory)

59 Iron Oxide Colloid Facilitated Plutonium Transport in Groundwater
N. Lu, C. R. Cotter, H. D. Kitten, I. R. Triay (Los Alamos National Laboratory)

60 The Distribution and Physicochemical Characterization of Uranium in U-Contaminated Soils after Leaching with Sodium Bicarbonate
C. F. V. Mason, N. Lu, H. D. Kitten, P. Longmire, W. R. J. R. Turney
(Los Alamos National Laboratory)

61 Human Health Issues for Plutonium Inhalation: Perspectives from Laboratory Animal Studies
B. A. Muggenburg, B. B. Boecker, J. A. Diel, R. A. Guilmette, F. F. Hahn, M. D. Hoover, D. L. Lundgren (Lovelace Respiratory Research Institute)

62 Plutonium Explosive Dispersal Using the MACCS^2 Computer Code
C. M. Steele, T. L. Wald, D. I. Chanin (Department of Energy, Los Alamos Area Office)

Detection and Analysis

63 Determination of Actinides in WIPP Brines by Inductively Coupled Plasma Mass Spectrometry
S. L. Bonchin, J. A. Eyre, L. A. Gallegos, T. M. Yoshida (Los Alamos National Laboratory)

64 A Method for Size and Activity Measurement of Minute Alpha Emitting Particles of Dispersed Reactor Fuel
O. A. Bondarenko (Radiation Protection Institute, Ukraine)

65 A New Principle of Alpha Particle Spectrometry Using SSNTD
O. A. Bondarenko (Radiation Protection Institute, Ukraine)

66 Laser Ablation—Inductively Coupled Plasma—Mass Spectrometry for Trace Analyte Determination in Actinide and Actinide Contaminated Matrices
J. Cross, D. J. Figg, C. Brink (Los Alamos National Laboratory)

67 Analysis of Pu and U Materials for Trace Contaminants Using a CID Equipped ICP-AES Echelle Spectrometer
D. J. Gerth (Los Alamos National Laboratory)

68 Investigation and Automation of Sorbert Extraction Separations of Actinides by Flow Injection Analysis
J. W. Grate,* O. B. Egorov,*† J. Ruzicka† (*Pacific Northwest National Laboratory, †University of Washington)

69 Measurement of Neutron Spectra in a Plutonium Facility
D. W. Gray, D. L. Wannigman, P. S. Hoover (Los Alamos National Laboratory)

70 Neutron Source Processing—Managing Radiation without Using a Hot Cell
D. W. Gray (Los Alamos National Laboratory)

71 Characterization of Plutonium Irreversibly Bound to Ion Exchange Resins Using X-Ray Absorption Spectroscopy
D. K. Veirs, C. A. Smith, S. D. Conradson, M. P. Neu, L. A. Morales (Los Alamos National Laboratory)

Novel Plutonium Actinide Compounds and Complexes

72 Spectroscopic Investigations of Np, Pu, and Am in Selected Immobilization Glasses
Z. Assefa,* R. G. Haire,* N. Stump† (*Oak Ridge National Laboratory, †Winston-Salem State University)

73 Ionic Strength and Acid Concentration Effects on the Thermodynamics and 5f Electronic Structure of Plutonium(IV) Nitrate and Chloride Complexes in Aqueous Solution
J. M. Berg, R. B. Vaughn, M. R. Cisneros, D. K. Veirs (Los Alamos National Laboratory)

74 Synthesis and Structural Characterization of Uranium (IV, VI) and Plutonium (IV, VI) Phosphates
J. A. Danis,*† H. T. Hawkins,† W. H. Runde,† D. K. Veirs,† B. W. Eichhorn* (*University of Maryland, †Los Alamos National Laboratory)

75 Electronic Structure and Phase Stability of Pu-Ga Alloys
A. Gonis,* P. E. A. Turchi,* N. Kioussis† (*Lawrence Livermore National Laboratory, †California State University at Northridge)

76 Crown Ether Complexation of Transuranic Ions (Np, Pu) Factors Influencing Inner-Sphere Versus Outer-Sphere Complexation
D. W. Keogh, D. L. Clark, P. D. Palmer, B. L. Scott, C. D. Tait (Los Alamos National Laboratory and the Glenn T. Seaborg Institute for Transactinium Science, CA)

77 Plutonium Coordination Chemistry with Oxygen Donor Ligands
M. P. Neu, D. L. Clark, S. D. Conradson, P. D. Palmer, S. D. Reilly, W. H. Runde, B. L. Scott, C. D. Tait (Los Alamos National Laboratory and the Glenn T. Seaborg Institute for Transactinium Science, CA)

78 Thermodynamic Studies of Nuclear Waste Ceramic Materials: Enthalpy of Formation for Zirconolite, $CaZrTi_2O_7$
R. L. Putnam,* A. Navrotsky,* B. Ebbinghaus,† M. A. Williamson,¥ J. Y. Huang¥ (*University of California at Davis / Princeton University, †Lawrence Livermore National Laboratory, ¥Los Alamos National Laboratory)

79 Characterization and Stability of Actinide (U, Np, Pu, Am) Carbonates
W. Runde,* D. L. Clark,* S. D. Reilly,* M. P. Neu,* P. D. Palmer,* C. D. Tait,* B. W. Eichhorn† (*Los Alamos National Laboratory and the Glenn T. Seaborg Institute for Transactinium Science, CA, †University of Maryland)

80 Chloride Complexation of Actinide Ions (U, Np, Pu, Am)
W. Runde, M. P. Neu, D. L. Clark, P. D. Palmer, S. D. Reilly, C. D. Tait (Los Alamos National Laboratory and the Glenn T. Seaborg Institute for Transactinium Science, CA)

81 Synthesis and X-Ray Investigation of New Compounds in the U-Nd-Au-Si-System
P.S. Salamakha (L'viv State University, Ukraine)

82 Determination of Thermodynamic Properties of Actinide Elements in Room Temperature Molten Salts
W. H. Smith, D. Costa, F. de Rege (Los Alamos National Laboratory)

83 Synthesis and Structural Chemistry of New Quaternary Germanides and Silicides of Uranium
O. L. Sologub (L'viv State University, Ukraine)

84 X-Ray Absorption Spectroscopy of Plutonium in Different Oxidation States
C. D. Tait, D. L. Clark, S. D. Conradson, M. P. Neu, P. D. Palmer, S. D. Reilly, W. H. Runde (Los Alamos National Laboratory and the Glenn T. Seaborg Institute for Transactinium Science, CA)

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