

Richard E. Wilson
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EDUCATION

- 2005 Ph.D., Chemistry, University of California, Berkeley
- 2000 BS, Chemistry, State University of New York at Binghamton

PROFESSIONAL EXPERIENCE

- 2019-present Chemist and Group Leader, Heavy Elements Group, Chemical Sciences and Engineering Division, Argonne National Laboratory.
- 2012-2019 Chemist, Heavy Elements and Separation Sciences Group, Chemical Sciences and Engineering Division, Argonne National Laboratory.
- 2007-2012 Assistant Chemist, Heavy Elements and Separation Sciences Group, Chemical Sciences and Engineering Division, Argonne National Laboratory.
- 2005-2007 Postdoctoral Fellow, Heavy Elements and Separation Sciences Group, Chemistry Division, Argonne National Laboratory.
- 2000-2005 Graduate Researcher, Heavy Elements, Nuclear and Radiochemistry, Lawrence Berkeley National Laboratory, and U.C. Berkeley.

AWARDS AND FELLOWSHIPS

- 2012 United States Department of Energy, Office of Science, Early Career Research Award
- 2001-2005 Graduate Fellow of the United States Department of Energy, Office of Civilian Radioactive Waste Management.
- 2000 Walter E. Kaskan Award in Physical Chemistry, SUNY-Binghamton.
- 1999 American Chemical Society, Binghamton Chapter, Undergraduate Award in Analytical Chemistry.
- 1999 United States Department of Energy and American Chemical Society, Fellowship in Nuclear and Radiochemistry.

PUBLICATIONS (most recent first) Web of Science Researcher ID: H-1763-2011

1. M. Autillo, R. E. Wilson. *Molecular Hydroxo-bridged dimers of U(VI), Np(VI), and Pu(VI): [Me₄N]₂(AnO₂)₂(OH)₂(NO₃)₄. Inorganic Chemistry*. DOI: 10.1021/acs.inorgchem.8603304. (2019)

2. D. D. Schnaars, R.E. Wilson, *Synthesis, structure and vibrational properties of $[Ph_4P]_2NpO_2Cl_4$ and $[Ph_4P]_2PuO_2Cl_4$ complexes*. *Inorganic Chemistry*. DOI: 10.1021/acs.inorgchem.7b02382. (2018).
3. R. E. Wilson, S. M. DeSio, Valerie Vallet. *Protactinium and the intersection of transition metal and actinide chemistry*. *Nature Communications* DOI: 10.1038/s41467-018-02972-z (2018) **DOE Office of Science web highlight:** <https://science.energy.gov/bes/highlights/2018/bes-2018-08-b/>
4. M. Autillo, R. E. Wilson, *Phase Transitions in Tetramethylammonium Hexachlorometalate Compounds, $(TMA)_2MCl_6$ ($M = U, Np, Pt, Sn, Hf, Zr$)*. *European Journal of Inorganic Chemistry*. DOI: 10.1002/ejic.201700764.
5. Wibe A. de Jong, Phuong D. Dau, Richard E. Wilson, Joaquim Marcalo, Michael J. Van Stipdonk, Theodore A. Corcovilos, Giel Berden, Jonathan Marthens, Jos Oomens, John K. Gibson. *Revealing Disparate Chemistries of Protactinium and Uranium. Synthesis of the Molecular Uranium Tetroxide Anion, UO_4^-* . *Inorganic Chemistry*. 2017. DOI: 10.1021/acs.inorgchem.7b00144
6. R. E. Wilson, S. M. DeSio, Valerie Vallet, *Structural and Electronic Properties of Nb(V), Ta(V), and Pa(V) Fluoride Complexes: The Influence of Relativistic Effects on the Group V Elements*. *European Journal of Inorganic Chemistry*. DOI: 10.1002/ejic.201600981 2016.
7. T. J. Carter, R. E. Wilson. *Coordination Chemistry of Homoleptic Actinide(IV) Thiocyanate Complexes*. *Chemistry-A European Journal*. **COVER ARTICLE:** DOI: 10.1002/chem.201502770. 2015.
8. R. E. Wilson, *Structure, Phase Transitions, and Isotope Effects in $(Me_4N)_2PuCl_6$* . *Inorganic Chemistry* 2015. dx.doi.org/10.1021/acs.inorgchem.5b01288. **COVER ARTICLE, Nov 2015**
9. P. Dau, R. E. Wilson, J. K. Gibson. *Elucidating Protactinium Hydrolysis: The Relative Stabilities of $PaO_2(H_2O)^+$ and $PaO(OH)_2^+$* . *Inorganic Chemistry*. 2015. DOI: 10.1021/acs.inorgchem.5b01078
10. S. M. DeSio, **R. E. Wilson**, *An EXAFS Study of the Speciation of Protactinium(V) in Aqueous Hydrofluoric Acid Solutions*. *Inorganic Chemistry*. 2014, 53, 12643-12649. DOI: 10.1021/ic502376m
11. D. D. Schnaars, **R. E. Wilson**, *Lattice Solvent and Crystal Phase Effects on the Vibrational Structure of $UO_2Cl_4^{2-}$* . *Inorganic Chemistry*. 2014 53 11036-11045. DOI: 10.1021/ic501553m
12. **R. E. Wilson**. *Retrieval and Purification of an Aged ^{231}Pa Source from its Decay Daughters*. *Radiochimica Acta*. 2014. DOI: 10.1515/ract-2013-2169.
13. S. M. DeSio, **R. E. Wilson** *Structural and Spectroscopic Studies of Fluoroprotactinates*. *Inorganic Chemistry*. 53 1750-1755 2014. DOI: 10.1021/ic402877a [**Highlighted in C&ENews, Feb 10, 2014, DOE Office of Science Highlight** <http://science.energy.gov/bes/highlights/2014/bes-2014-10-b/>]

14. **R. E. Wilson**, D. D. Schnaars, M. Andrews, C. L. Cahill. *Supramolecular Interactions in $\text{PuO}_2\text{Cl}_4^{2-}$ and PuCl_6^{2-} Complexes with Protonated Pyridines and Amines*. *Inorganic Chemistry*, 53(1) 383-392, 2014. DOI: 10.1021/ic4023294.
15. M. Schmidt, S. S. Lee, **R. E. Wilson**, K. E. Knope, F. Bellucci, P. J. Eng, J. E. Stubbs, L. Soderholm, P. Fenter. *Surface-mediated formation of Pu(IV) nanoparticles at the muscovite-water electrolyte interface*. *Environmental Science and Technology*. 47(24) 14178-14183, 2013. DOI: 10.1021/es4037258.
16. D. D. Schnaars, **R. E. Wilson**. *Structural and Vibrational Properties of $\text{U(VI)O}_2\text{Cl}_4^{2-}$ and $\text{Pu(VI)O}_2\text{Cl}_4^{2-}$ complexes*. *Inorganic Chemistry*. 52(24) 14138-14147, 2013. DOI: 10.1021/ic401991n
17. P. Cantos, L. Jouffret, **R. E. Wilson**, P. C. Burns, C. L. Cahill. *A Series of Uranyl-4,4'-biphenyldicarboxylates and an Occurrence of a Cation-Cation Interaction: Hydrothermal Synthesis and in-situ Raman Studies*. *Inorganic Chemistry*. 52(16) 9487-9495 2013. DOI: 10.1021/ic401143g . 2013.
18. **R. E. Wilson**. *Structural Periodicity in Aqueous Pu(IV) Sulfates* . *Inorganic Chemistry*. 51(16) 8942-8947, 2012.
19. D. D. Schnaars, **R. E. Wilson**. *Uranium(IV) Sulfates: Investigating Structural Periodicity in the Tetravalent Actinides*. 2012 DOI: ic301291w.
20. **R.E. Wilson**. *In your element: Peculiar Protactinium*. *Nature Chemistry*. 4, July 2012.
21. **R. E. Wilson**. *Structural Periodicity in Aqueous Pu(IV) Sulfates* . *Inorganic Chemistry*. 51(16) 8942-8947, 2012.
22. M. Schmidt, S. S. Lee, **R.E. Wilson**, L. Soderholm, P. Fenter. *Sorption of Tetravalent Thorium on Muscovite*. *Geochimica et Cosmochimica Acta*. 88, 66-79, 2012.
23. M. Schmidt, **R. E. Wilson**, S. S. Lee, L. Soderholm, P. Fenter. *Adsorption of Plutonium Oxide Nanoparticles*. *Langmuir*, 28(5), 2620-2627, 2012 .
24. **R. E. Wilson**, S. Skanthakumar, L. Soderholm. *Separation of Plutonium Oxide Nanoparticles and Colloids*. *Angewandte Chemie International Edition*. 50(47) 11234-11237, 2011. **EDITORS' CHOICE ARTICLE**
25. K. E. Knope, **R. E. Wilson**, S. Skanthakumar, L. Soderholm. *Synthesis and Characterization of Thorium Sulfates*. *Inorganic Chemistry*, 50(17), 8621-8629, 2011.
26. **R. E. Wilson**, S. Skanthakumar, C. L. Cahill, L. Soderholm. *Structural studies coupling X-ray diffraction and high-energy X-ray scattering in the UO_2^{2+} - HBr_{aq} system*. *Inorganic Chemistry*, 50(21) 10748-10754, 2011.
27. K. E. Knope, **R. E. Wilson**, M. Vasilu, D. A. Dixon, L. Soderholm. *Thorium(IV) molecular clusters with a hexanuclear core*. *Inorganic Chemistry* 50(19) 9696-9704, 2011.

28. B. Aryal, D. Gorman-Lewis, T. Paunesku, **R. E. Wilson**, B. Lai, S. Vogt, G. Woloschak, M. P. Jensen. *Plutonium Uptake and Distribution in Mammalian Cells: Molecular vs Polymeric Plutonium*. *International Journal of Radiation Biology*. 87(10) 1023-1032, 2011.
29. L. Soderholm, S. Skanthakumar, **R. E. Wilson**. *Structural correspondence between uranyl chloride complexes in solution and their stability constants*. *Journal of Physical Chemistry A*. 115, 4959-4967, 2011.
30. **R. E. Wilson**. *Structural Periodicity in Pu(IV) Sulfates*. *Inorganic Chemistry*. 50(12), 5663-5670, 2011.
31. P. Fenter, S. S. Lee, C. Park, L. Soderholm, **R. E. Wilson**, O. Schwindt. *Interaction of muscovite (001) with Pu(III) bearing solutions at pH 3 through ex-situ observations*. *Geochimica et Cosmochimica Acta*, 74(24) 6984-6995. 2010.
32. **R.E. Wilson**, O. Schwindt, P. Fenter, L. Soderholm. *Exploitation of the sorptive properties of mica for the preparation of higher-resolution alpha-spectroscopy samples*. *Radiochimica Acta*. 98, 431-436, (2010).
33. L. Soderholm, S. Skanthakumar, **R. E. Wilson**. *Structures and Energetics of Erbium Chloride Complexes in Aqueous Solution*. *Journal of Physical Chemistry, A*. 113(22), 6391-6397, (2009).
34. C. Hennig, A. Ikeda, K. Schmeide, V. Brendler, H. Moll, S. Tsushima, A. C. Scheinost, S. Skanthakumar, **R. E. Wilson**, K. Servaes, C. Gorrlér-Walrand, R. Van Deun. *The relationship of monodentate and bidentate coordinated uranium(VI) sulfate in aqueous solution*. *Radiochimica Acta*, 96, 607-611, 2008.
35. **Richard E. Wilson**, S. Skanthakumar, Karah Knope, Christopher Cahill, and L. Soderholm. *A Thorium Sulfate Hydrate with 11.5 Å Framework Voids*. *Inorganic Chemistry*. 47(20) 9321-9326, 2008.
36. L. Soderholm, P. M. Almond, S. Skanthakumar, **Richard E. Wilson**, Peter C. Burns. *The structure of a Pu-38 oxide nanocluster*. *Angewandte Chemie Int. Ed.* 47 298-302, (2008). **(VIP ARTICLE AND FRONTISPIECE)**
37. C. H. Booth, M. Daniel, **R. E. Wilson**, E. D. Bauer, J. Mitchell, N. Moreno, L. A. Morales, J. L. Sarrao, and P. G. Allen. *Quantifying structural damage from self-irradiation in a plutonium superconductor*. *Physical Review B*. 76(6), 064530 (2007).
38. **R. E. Wilson**, S. Skanthakumar, P. C. Burns, L. Soderholm. *Structure of the homoleptic thorium(IV) aqua ion: $[Th(H_2O)_{10}]Br_4$* . *Angewandte Chemie Int. Ed.*. 46, 8043-8045, (2007).
39. S. Skanthakumar, M. R. Antonio, **R. E. Wilson**, L. Soderholm. *The curium aqua ion*. *Inorganic Chemistry* 46(9) 3485-3491 (2007).
40. C. H. Booth, M. Daniel, **R. E. Wilson**, E. D. Bauer, J. Mitchell, N. Moreno, L. A. Morales, J. L. Sarrao. *Self-irradiation damage and 5f localization in PuCoGa₅*. *Journal of Alloys and Compounds* 444, 199-123 (2007).

41. **Richard E. Wilson**, S. Skanthakumar, Ginger Sigmon, Peter C. Burns, L. Soderholm. *Structures of Dimeric Hydrolysis Products of Thorium*. *Inorganic Chemistry* 46(7) 2368-2372, (2007). **COVER ARTICLE**
42. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *The structures of polynuclear Th(IV) hydrolysis products*. in *Actinides 2006 – Basic Science, Applications and Technology*, ed. K.J.M. Blobaum, E. Chandler, L. Havela, M.B. Maple, M. Neu., Materials Research Society Proceedings. 986 (2007).
43. **Richard E. Wilson**, Philip M. Almond, Peter. C. Burns, L. Soderholm. *Structure and synthesis of Pu(III) chlorides in aqueous solution*. *Inorganic Chemistry*, 45, 8483-8485, (2006).
44. C. W. Kanyi, D. C. Doetschman, J. T. Schulte, K. Yan, **R. E. Wilson**, B. R. Jones, C. O. Kowenje, S. W. Yang. *Linear, primary monohaloalkane chemistry in NaX and NaY faujasite zeolites with and without Na⁺-treatment: Zeolites as nucleophilic reagents II*. *Microporous and Mesoporous Materials*, 92(1-3), pages 292-299, (2006).
45. R. Sudowe, M. G. Calvert, Ch. E. Düllmann, L. M. Farina, C. M. Folden III, K. E. Gregorich, S. E. H. Gallaher, S. L. Nelson, D. C. Phillips, J. M. Schwantes, **R. E. Wilson**, P. M. Zielinski, D. C. Hoffman and H. Nitsche. *Extraction of short-lived zirconium and hafnium isotopes using crown ethers: A model system for the study of rutherfordium*. *Radiochimica Acta*, 94(3), pages 123-129, 2006.
46. **Richard E. Wilson**. *Reactions of Pu(VI) with the iron oxide goethite*. Ph.D. Dissertation, University of California, Berkeley. 2005. 208 pages.
47. H. J. Nilsson, T. Tyliczszak, **R. E. Wilson**, L. Werme, and D. K. Shuh. *Soft X-ray Spectromicroscopy of Actinide Particulates*. In *Recent Advances in Actinide Science*, Royal Society of Chemistry, R. Alvarez, N. D. Bryan, and I. May, Eds., Royal Society of Chemistry, 2006. LBNL-58889
48. H. J. Nilsson, T. Tyliczszak, **R. E. Wilson**, L. Werme, and D. K. Shuh. *Soft X-ray Scanning Transmission X-ray Microscopy (STXM) of Actinide Particles*. *Analytical and Bioanalytical Chemistry*, 383(1), 41-47, 2005.
49. K.E.Gregorich, W.Loveland, D.Peterson, P.M. Zielinski, S.L. Nelson, Y.H. Chung, Ch.E. Düllmann, C.M. Folden III, K. Aleklett, R. Eichler, D.C. Hoffman, J.P. Omtvedt, G.K. Pang, J.M. Schwantes, S. Soverna, P. Sprunger, R. Sudowe, **R.E. Wilson**, and H. Nitsche. *Attempt to confirm superheavy element production in the ⁴⁸Ca + ²³⁸U reaction*. *Physical Review C*. 72, 014605, 2005.
50. Philip A. Wilk, Dawn A. Shaughnessy, **Richard E. Wilson**, Heino Nitsche. *"Interfacial Reactions between Np(V) and Manganese Oxide Minerals Manganite and Hausmannite."* *Environmental Science and Technology*, 39(8), 2608-2615. 2005.
51. Gorden, A. E. V.; Shuh, D. K.; Tiedemann, B. E. F. ; **Wilson, R. E.**; Xu, J.; Raymond, K. N.; *Sequestered Plutonium: Pu(IV)[Bis(5- LIO - Me- 3,2- HOPO)]₂ The First Structurally Characterized Plutonium Hydroxypyridonate Complex*. *Chemistry --A European Journal*, 9, 2842-2848, 2005. **Cover Article**.

52. **Richard E. Wilson**, Yung Jin Hu, and Heino Nitsche. *Low-level detection of plutonium(III, IV, V, VI) using a liquid-core waveguide*. *Radiochimica Acta*. 93, 203-206, 2005. LBNL-54415.

53. Dawn Shaughnessy, Corwin H. Booth, Heino Nitsche, David K. Shuh, Glenn A. Waychunas, **Richard E. Wilson**, Herman Gill, Kirk J. Cantrell, and R. J. Serne. *Molecular interfacial reactions between Pu(VI) and manganese oxide minerals manganite (MnOOH) and Hausmannite (Mn₃O₄)*. *Environmental Science and Technology*, 2003. 37(15): p.3367-3374.

54. Dawn Shaughnessy, Heino Nitsche, Corwin Booth, David Shuh, Glenn Waychunas, **Richard Wilson**, Kirk Cantrell, R. J. Serne. *Complexation and redox interactions between plutonium and manganese oxide interfaces*. *Journal of Nuclear Science and Technology*. Supp. 3, 274-277, 2002.

INVITED PRESENTATIONS (most recent first)

1. Richard E. Wilson. "Protactinium: An intersection between transition metal and actinide chemistries." *Department of Chemistry, Chemistry Colloquium*. University of Iowa. Iowa City, IA. February 9, 2019.

2. Richard E. Wilson. "Protactinium: An intersection between transition metal and actinide chemistries." *Department of Chemistry, Chemistry Colloquium*. Colorado School of Mines, Golden, CO. November 21, 2018.

3. Richard E. Wilson. "Protactinium: An intersection between transition metal and actinide chemistries." *Department of Chemistry, Physical Chemistry Seminar*. Texas A&M University. College Station, TX. October 9, 2018.

4. Richard E. Wilson, Matthieu Autillo, Tyler Carter, S. Skanthakumar, V. Vallet, L. Soderholm. *Thiocyanate Complexes of Lanthanides and Actinides*. International Conference on f-Elements. Lausanne, Switzerland. September 2018.

5. *Richard E. Wilson. *The Role of CP-1 in the Modern Periodic Table*. American Chemical Society Summer School in Nuclear and Radiochemistry. San Jose California, July 2018.

6. *Richard E. Wilson, Matthieu Autillo. *Actinide(VI) Nitrate Complexes: Influences of Ion-Pairing and Association*. American Chemical Society Meeting, New Orleans, Louisiana. March 2018.

7. *Richard E. Wilson, CP-1: New Chemistry and the Periodic Table. *Physics Division Colloquium*. Argonne National Laboratory. December 11, 2017.

8. Richard E. Wilson, CP-1: New Chemistry and the Periodic Table. *Director's Colloquium, Argonne National Laboratory*. September 2017.

9. Richard E. Wilson, "The Chemistry and Radiochemistry of Protactinium" American Chemical Society Summer School in Nuclear and Radiochemistry, San Jose State University, San Jose, CA, July 2017.

10. Richard E. Wilson, "Periodicity and the Chemistry of Protactinium" Rare Earth Research Conference, Ames Iowa. June 18-22, 2017
11. Richard E. Wilson, "Protactinium: "A periodic intersection between actinide and transition metal chemistry." Institute for Nuclear Science and Technology, Washington State University, Pullman, WA. June 2017.
12. Richard E. Wilson, M. Autillo. "Structures and Phase Transitions in Actinide(IV) Hexachlorides." Seaborg Award Symposium in Honor of David Clark. American Chemical Society National Meeting, San Francisco, April 2017.
13. Richard E. Wilson. "Periodicity and the Chemistry of Protactinium." Symposium in Honor of Bruce Bursten. American Chemical Society National Meeting, San Francisco, April 2017.
14. Richard E. Wilson, "Protactinium: A periodic intersection between actinide and transition metal chemistry" Seaborg Institute Seminar. Los Alamos National Laboratory, Los Alamos New Mexico. January 2017.
15. **Richard E. Wilson**, "Tri- and Tetravalent Actinide Thiocyanate Complexes" Plutonium Futures 2016. Baden Baden, Germany.
16. **Richard E. Wilson**, "The Chemistry and Radiochemistry of Protactinium" American Chemical Society Summer School in Nuclear and Radiochemistry, San Jose State University, San Jose, CA, June 2016.
17. **Richard E. Wilson**. "Periodicity and the role of the 5f-electrons at Protactinium" Department of Chemistry Colloquium, Florida State University, Tallahassee, Florida. January 22, 2016.
18. **Richard E. Wilson**. "The Chemistry of Niobium, Tantalum, and Protactinium" Pacificchem 2015, Honolulu, HI. December 2015.
19. **Richard E. Wilson**, "Periodicity and the Role of the 5f Electrons at Protactinium" Nuclear Physics Forum: Lawrence Berkeley National Laboratory. July 9, 2015.
20. **Richard E. Wilson**, "The Chemistry and Radiochemistry of Protactinium" American Chemical Society Summer School in Nuclear and Radiochemistry. San Jose State University, San Jose, California, June 2015.
21. **Richard E. Wilson**, "Periodicity and the Role of the 5f electrons at Protactinium." Principal Investigators' Meeting, DOE Heavy Elements Chemistry. Gaithersburg, Maryland, April 2015.
22. **Richard E. Wilson**, Stephanie DeSio, Valerie Vallet. "Protactinium: Chemistry at the Intersection of the 5f and 6d elements." American Chemical Society National Meeting, Denver Colorado, March 21-26 2015.
23. **Richard E. Wilson**, "Vibrational Properties of the Actinyl Ions" Plutonium Futures, The Science, Las Vegas Nevada, September 2014.

24. **Richard E. Wilson**, “Structural and Spectroscopic Studies of Actinyl(VI) Complexes of U(VI), Np(VI), and Pu(VI)” Glenn T. Seaborg Center Seminar, Lawrence Berkeley National Laboratory, August 2014.
25. **Richard E. Wilson**, “Protactinium to Plutonium: Chemistry Across the Actinide Series” American Chemical Society Summer School in Nuclear and Radiochemistry. San Jose State University, San Jose, California, June 2014.
26. **Richard E. Wilson**, Stephanie DeSio, “The Chemistry of Protactinium Fluorides.” 245th National Meeting of the American Chemical Society, Dallas Texas, April 2014.
27. **Richard E. Wilson**, “Protactinium to Plutonium: Chemical Periodicity in the Actinide Elements” State University of New York, Binghamton. Materials Science and Engineering Colloquium. December 11, 2013.
28. **Richard E. Wilson**, “The Chemistry and Radiochemistry of Protactinium” American Chemical Society Summer School in Nuclear and Radiochemistry. San Jose State University, San Jose California, June 2013.
29. **Richard E. Wilson**, “Structural and Chemical Properties of Lower Valent Actinide Complexes” United States Department of Energy, Office of Science, Office of Basic Energy Sciences, Heavy Element Chemistry Program Contractors’ Meeting. Baltimore, MD. 2011.
30. **Richard E. Wilson**. “Periodicity Across the Actinide Series: Coupling Structural and Solution Studies.”. Pacifichem 2010. December 2010.
31. **Richard E. Wilson**. *Periodicity in Actinide Chemistry*. Plutonium Futures –The Science. Keystone Colorado, September 2010.
32. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *Surface Reactivity of Plutonium Polymer: Developing a Selective Solvent Extraction Method*. 239th National Meeting of the American Chemical Society, San Francisco, California, March 2010.
33. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *Surface Reactivity of Plutonium Polymer*. Asia-Pacific Symposium on Radiochemistry. Napa, California, December 2009.
34. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *Solvation of Actinides: From Ions to Colloids*. University of California, College of Chemistry, Berkeley, California, September 28, 2008.
35. **Richard E. Wilson**, Renato Chiarizia, S. Skanthakumar, L. Soderholm. *Chemical, Structural, and Optical Properties of Plutonium Polymer*. International Solvent Extraction Conference, Tucson, Arizona, September 18, 2008.
36. **Richard E. Wilson**, L. Soderholm, S. Skanthakumar. *Actinide Aggregation and Aggregate Formation*. Savannah River National Laboratory, Aiken, South Carolina, February 13, 2008.
37. **Richard E. Wilson**. *Actinides in Aqueous Solution*. Glenn T. Seaborg Center Seminar, Lawrence Berkeley National Laboratory, Berkeley, California. December 11, 2007.

38. **Richard E. Wilson** *The Environmental Chemistry of the Actinides*. Lawrence Livermore National Laboratory, Seaborg Institute Seminar Series, April 2005.
39. **Richard E. Wilson**, Corwin H. Booth, H. Nitsche. *Interaction of Uranium, Neptunium and Plutonium with Goethite*. Pacifichem, December 14-21, 2005, Honolulu, Hawaii.
40. **Richard E. Wilson**. *Plutonium Interactions with Goethite*. OCRWM Graduate Fellows Conference, September 22-25, 2004. Las Vegas, Nevada.
41. **Richard E. Wilson**, Corwin H. Booth, H. Nitsche. *Plutonium Interactions with FeOOH: A Variable Temperature EXAFS Study*. Advanced Photon Source Users' Meeting. May 2-6, 2004, Argonne, Illinois.

CONTRIBUTED PRESENTATIONS (most recent first)

1. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *The Reactivity of the Plutonium Colloid Surface: Implications for Environmental Transport*. Migration 2009, Kennewick, Washington, September 2009.
2. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *Reactivity of Plutonium Colloids in Solution*. Actinides 2009, San Francisco, California. July 2009.
3. **Richard E. Wilson**. *The Sulfates of Tetravalent and Trivalent Plutonium*. Plutonium Futures 2008 –The Science, Dijon, France. July 2008.
4. **Richard E. Wilson**, S. Skanthakumar, L. Soderholm. *The Hydrated Thorium Ion and its Hydrolysis Products*. Migration 2007, Munich, Germany, August 2007. **(POSTER PRIZE)**
5. **Richard E. Wilson**, S. Skanthakumar, Ginger Sigmon, Y. J. Hu, Peter C. Burns, L. Soderholm. *Structures of Th(IV) Hydrolysis Products*. Materials Research Society Meeting. Boston, MA. December 2006.
6. **Richard E. Wilson**, Heino Nitsche, Corwin Booth., *Np and Pu Interactions with Goethite, Hausmannite and Manganite: A Low-Temperature XAS Study*. 3rd Workshop on Speciation, Techniques, and Facilities for Radioactive Materials at Synchrotron Light Sources Berkeley, USA September 14 - 16, 2004
7. **Richard E. Wilson**, Dawn A. Shaughnessy, Corwin H. Booth, and Heino Nitsche. *Plutonium(VI) interactions with goethite: A Sorption and EXAFS Study*. American Chemical Society National Meeting, Spring 2004, Anaheim, California. LBNL-54410
8. **Richard E. Wilson**, Dawn A. Shaughnessy, Corwin H. Booth, and Heino Nitsche. *Plutonium(VI) and (V) reactions with goethite: A Sorption and EXAFS Study*. Migration 2003, Kyongju, Korea. LBNL-54409
9. **Richard E. Wilson**, Yung-Jin Hu, Heino Nitsche. *Low-Level Detection and Quantification of Pu(III), (IV), (V), and (VI) using a Liquid Core Waveguide*. Plutonium Futures 2003. Albuquerque, New Mexico. LBNL-54408

10. **Richard E. Wilson**, Dawn A. Shaughnessy, Corwin H. Booth, Heino Nitsche. *EXAFS Investigations on the Interaction of Pu(VI)O₂²⁺ with Goethite*. American Chemical Society National Meeting, Spring 2003, New Orleans, Louisiana. LBNL-51713

FUNDING APPLICATION HISTORY

2019 Argonne National Laboratory, LDRD.

2019 United States Department of Energy, Office of Science. Data Science for Chemistry and Materials Science. Mitchell, Kanatzidis, Chan, Wilson, Blaiszek, Foster. Argonne National Laboratory, co-PI. 2019-2022.

2018 United States Department of Energy, Office of Nuclear Energy, NEUP Program. Rebecca Abergel, lead PI-Nuclear Engineering, U.C. Berkeley. \$800K. (National Laboratory Co-PI)

2018 United States Department of Energy, Office of Science, Energy Frontier Research Center, *FISSION* (Center for Fuel Interface Science in Synergistic Ionic Environments). LBNL – lead institution. not-awarded

2017 United States Department of Energy, National Nuclear Security Agency. *A Field Portable alpha-spectrometer for Nuclear Safeguards*. \$500K. not awarded.

2017 United States Department of Energy, National Nuclear Security Agency. *Proliferation Safeguards for a Thorium Fuel Cycle*. R. E. Wilson, N. Smith. \$400K. not awarded.

2016 United States Department of Energy, Office of Science, Energy Frontier Research Center, *Chemistry of Organics in Heterogeneous Environments*. L. Soderholm (Director), M. R. Antonio (Thrust Lead), R. E. Wilson (Thrust Lead), M. Olvera de la Cruz (Thrust Lead). \$4M. not awarded.

2012 United States Department of Energy, Office of Science, Early Career Awards, *Periodicity and the Role of the 5f-electrons at Protactinium*. R. E. Wilson, PI, \$2.5M. awarded.

2010 United States Department of Energy, Office of Science. Supplemental Instrumentation Call. *Acquisition of Raman Microscope*. L. Soderholm, M. Antonio, M. Jensen, G. Liu, G. Luo, S. Skanthakumar, R. E. Wilson. \$430K. awarded.

2009 U.S. DOE, Office of Basic Energy Sciences, SISGR. *Understanding Actinide Aggregation*. L. Soderholm, D. A. Dixon (Univ. of Alabama), R. E. Wilson, G. Luo. \$2.4 M, awarded.

2008 Advanced Fuel Cycle Initiative, United States Department of Energy, Office of Nuclear Energy, *Solvent Extraction Methods for the Recovery of Polymeric Plutonium*, Richard E. Wilson [PI], Renato Chiarizia, Lynda Soderholm. \$330,000. not awarded.

2008 Argonne National Laboratory, Laboratory Directed Research and Development. *Solvent Extraction of Colloidal Aluminum Oxide Applicable to High-Level Radioactive Wastes*. Richard E. Wilson [PI], Lynda Soderholm. \$120,000. awarded

2007 Argonne National Laboratory, Laboratory Directed Research and Development. *The Structural Chemistry and Reactivity of the Transuranium Molybdates*. Richard E. Wilson [PI], Lynda Soderholm, George Vandegrift. \$113,000. awarded.

2007-2010 National Science Foundation, Environmental Protection Agency, Department of Energy, tri-agency announcement. *Pu Solution Complexation, Aggregation and Surface Adsorption Relevant to Environmental Transport*. Lynda Soderholm [PI], Paul Fenter [PI], Richard E. Wilson [PI]. \$1,200,000. awarded.

2001-2005 United States Department of Energy, Office of Civilian Radioactive Waste Management. Graduate Fellowship. Richard E. Wilson, \$120,000.00 awarded.

INVENTION ACTIVITY

“Selective Solvent Extraction System for Plutonium Colloids and other Oxide Nanoparticles.” ANL-IN-08-054., Lead Inventor, March 2010. U.S. Patent Number 8,741,237.

PROFESSIONAL ACTIVITIES AND SERVICE

Symposia Organized

Rare Earth Research Conference. Program Chair, Philadelphia PA 2020.

Plutonium Futures: Member of Program Committee, Plutonium Futures 2018.

Seaborg Award Symposium in Honor of Heino Nitsche, American Chemical Society, National Meeting, Denver, Colorado, March 2015.

Plutonium Futures: Member of Program Committee, Plutonium Futures 2014.

Actinide Science, Asia-Pacific Symposium on Radiochemistry, Napa, California, December 2009.

Peer-Review Activities

Inorganic Chemistry

Radiochimica Acta

Journal of Solid State Chemistry

Journal of Nuclear Materials

Inorganic Chemistry Communications

Environmental Science and Technology

Inorganica Chimica Acta

Journal of the American Chemical Society

Polyhedron

Chemistry-A European Journal

Chemistry-An Asian Journal

Angewandte Chemie

Nature Chemistry

Chemical Communications

United States Department of Energy, Office of Science, BER.

United States Department of Energy, Office of Science Early Career Research Program.

United States Department of Energy, Office of Science Graduate Fellowship Program.

United States Department of Energy, Office of Science, Office of Basic Energy Sciences.

United States Department of Energy, Office of Science, Office of Nuclear Physics.

United States Department of Defense, Defense Threat Reduction Agency, Reviewer for Basic Research Proposals, 2013 & 2015.

ACS/DOE Summer School in Nuclear and Radiochemistry, Applicant Reviewer, 2010-2012

ACS/DOE Summer School in Nuclear and Radiochemistry, Applicant Reviewer, 2015

Committee Service

Physical Sciences and Engineering Directorate, Argonne National Laboratory,
Mid-Career Working Group, Chairperson 2017-2019
Chemical Sciences and Engineering Division Director Search Committee 2017
Laboratory Director's Post-Doctoral Fellowship Selection Committee 2013-2015
Argonne National Laboratory, Named Post-Doctoral Fellowship Selection Committee
ANL User Committee for a Site Wide Radiological Inventory System, 2014-present

Administrative Activities

Divisional Nuclear Materials Contact, Argonne National Laboratory.
Radiological Facility, Facility Inventory Manager, Argonne National Laboratory.

Post-Doctoral Fellow Sponsor:

Matthieu Autillo Ph.D. (CEA-Marcoule), Argonne 2017-2019 (CEA-Marcoule)
Tyler J. Carter Ph.D. (UMichigan), Argonne 2014-2015, (Cabot Microelectronics, Aurora IL)
Stephanie DeSio Ph.D. (CEA-Marcoule), Argonne 2013-2014, (AREVA, Paris France)
David D. Schnaars Ph.D. (UCSB), Argonne 2011-2014, (AAAS Fellow, U.S. State Department)

TEACHING EXPERIENCE

CHEM 146 *Chemical Methods in Nuclear Technology.* (U.C. Berkeley)

Teaching assistant for the radiochemistry laboratory of approximately 12 students.
Primarily responsible for the laboratory section and development of new laboratory experiments.
The class covered nuclear counting instrumentation, spectroscopy, solvent and ion-exchange
extractions, and neutron activation analysis.

CHEM 143 *Nuclear Chemistry.* (U.C. Berkeley)

Teaching assistant for the nuclear chemistry class of approximately 20 students.
Primarily responsible for out of lecture tutoring of students during office hours, collection and
grading of homework assignments and examinations. The lecture covered fundamental aspects of
low-energy nuclear physics including the liquid-drop model and shell models, nuclear
deformations, nuclear fission, and nuclear reactions.

CHEM 1A *General Chemistry.* (U.C. Berkeley)

Teaching assistant for the freshman chemistry lecture and laboratory course.
Responsible for the laboratory component for approximately 30 students, grading of reports,
exams, and homework problems. The course covered general inorganic and physical chemistry,
thermodynamic principles, acid-base chemistry, and a brief introduction to nuclear chemistry.

PROFESSIONAL SOCIETIES

Member, American Chemical Society.
Division of Nuclear Chemistry and Technology
Division of Inorganic Chemistry

OUTSIDE ACTIVITIES AND MEMBERSHIPS

Member, Aircraft Owners and Pilots Association, 2004 to present
Member, Experimental Aircraft Association, 2018 to present
Member, American Bonanza Society, 2019 to present
Member, Board of Directors, DuPage Pilots Association, 2018 to present
Secretary, DuPage Pilots Association, 2019 to present
FAA Safety Team (FAASTeam) Representative, DuPage FSDO. 2019 to present
Private Pilot ASEL September 2004 to present