Curriculum Vitae
Dr. Tori Z. Forbes

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EDUCATIONAL AND PROFESSIONAL HISTORY

1. Higher Education

University of Notre Dame, 2003-2007, Environmental Mineralogy, Ph. D.
Advisor: Professor Peter C. Burns

Beloit College, 1997-2001, Chemistry, B.S., minor in Environmental Studies

2. Professional and Academic Positions

Professor, 2022-current, University of Iowa Department of Chemistry

Director of the University of Iowa MatFab Facility, 2022-current

Adjunct Professor, 2017-current, University of Iowa Department of Civil and Environmental Engineering

Associate Professor, 2016-2022, University of Iowa Department of Chemistry

Assistant Professor, 2010-2016, University of Iowa Department of Chemistry

Postdoctoral Researcher 2008-2010, University of California at Davis.
Advisor: Professor Alexandra Navrotsky

Adjunct Instructor 2007-2008, University of Notre Dame, Department of Civil Engineering and Geological Sciences

Postdoctoral Researcher 2007-2008, University of Notre Dame
Advisor: Professor Slavi C. Sevov

Research Assistant II, 2001-2003, Woods Hole Oceanographic Institute, Marine Chemistry and Geochemistry, Woods Hole, MA

3. Honors and Awards

Regents Award for Faculty Excellence 2025
University of Iowa Collegiate Scholar 2022-2024
James Van Allen Natural Sciences Fellow 2022-2023
UI Department of Chemistry Research Scholar Award 2021
UI Honors Lane Davis Team Teaching Award 2019
UI Honors Lane Davis Team Teaching Award 2017
University of Iowa Dean's Scholar 2016 - 2018
Finalist for Iowa Women of Innovation Award, 2015 and 2016
Department of Energy Early Career Award, 2015
Chemical Communications Emerging Young Investigator, 2015
Iowa Center for Research by Undergraduates, Distinguished Faculty Mentor, 2014

NSF CAREER Award, Division of Materials Research, 2013
Finalist for Early Career Scientist Poster Award, Actinides Meeting, 2009
Bayer Pre-doctoral Fellowship, 2006-2007
NDEER Symposium Graduate Student Poster Award, 2005
Environmental Molecular Science Institute Graduate Student Fellowship, 2005-2007
Edward C. Fuller Award for Chemistry Education, May 2001
Erickson Scholarship in Chemistry, August 1999
Beloit College Presidential Scholarship, August 1997

4. Memberships

American Chemical Society, Geological Society of America, Mineralogical Society of America, Materials Research Society

TEACHING AT THE UNIVERSITY OF IOWA

1. Teaching Assignments

Semester	Advisees		Courses taught	
	BA/BS*	Grad.	Course No. and Title	Students Enrolled
Fall 2025	0	10	CHEM:5013 Science Writing in Chemistry	23
Spring 2025	0	11	ISA:3040 ISA Student Development Seminar	9
Fall 2024	0	9	CHEM:5013 Science Writing in Chemistry	20
Spring 2024	0	11		
Fall 2023	0	9	ISA:3040 ISA Student Development Seminar	6
			CHEM:5013 Science Writing in Chemistry	12
Spring 2023	0	11		
Fall 2022	0	7	ISA:3040 ISA Student Development Seminar	6
Spring 2022	0	8	CHEM:3250 Inorganic Chemistry	68
Fall 2021	0	7	IBA:3040 IBA Student Development Seminar	8
Spr. 2021	3	7	CHEM:3250 Inorganic Chemistry	67
Fall 2020	3	8	CHEM:1110 Principles of Chemistry I (team taught with 3 other instructors)	1092
			HONR:1300 Grit, Resiliency, and Success in Science	19
Spr. 2020	3	8	CHEM:4760 Radiochemistry	45
Fall 2019	3	6	CHEM:1110 Principles of Chemistry I (team taught with two other instructors)	983
			HONR:1300 Grit, Resiliency, and Success in Science	22

Spr. 2019		7	CDA	
Fall 2018	10	8	CHEM:1110 Principles of Chemistry I (team taught with two other instructors)	957
Spr. 2018	10	7	CHEM:4760 Radiochemistry	39
Fall 2017	15	5	CHEM:5283 Inorganic Seminar	7
Spr. 2017	6	8	CHEM:1110 Principles of Chemistry I (team taught with two other instructors)	844
Fall 2016	6	8	CHEM:4270 Advanced Inorganic Chemistry	25
Spr. 2016	4	9	CHEM:3250 Inorganic Chemistry	81
Fall 2015	8	7	CHEM:4760 Radiochemistry (flex-load, 25% appointment)	26
Spr. 2015	7	5	CHEM:3250 Inorganic Chemistry	79
Spr. 2015			ENVS:3000 Environmental Seminar (team taught with one other instructor)	41
Fall 2014	8	5	CHEM:1110 Principles of Chemistry I (lead instructor, team taught with two other instructors)	774
Spr. 2014	5	3	CHEM:3250 Inorganic Chemistry	79
			CHEM:5283 Inorganic Seminar	5
Fall 2013	4	3	CHEM:4760 Radiochemistry	17
Spr. 2013	6	3	CHEM:3250 Inorganic Chemistry	55
Fall 2012	9	1	CHEM:1110 Principles of Chemistry I (team taught with two other instructors)	838
Spr. 2012	5	2	CHEM:3250 Inorganic Chemistry	63
Fall 2011	5	1	CHEM:5283 Inorganic Seminar	7
Spr. 2011	2	1	CHEM:3250 Inorganic Chemistry	71
Fall 2010	0	0	CHEM:1110 Principles of Chemistry I (team taught with one other instructor)	771

*These are undergraduate students that I advised as part of the Environmental Science program. The undergraduate students that I mentored in research are listed below as part of students supervised.

2. Students Supervised

Degree objective:	Student name	Years	Outcome
Ph.D. candidates	Josh de Groot	2011-2016	Lecturer, College of South ID
	Andrew Knight	2012-2016	Postdoc, Scientist, Sandia Perspective Therapeutics
	Ashini Jayasinghe	2012-2017	Postdoc, FSU, Seaborg Postdoc, INL, Scientist, INL
	Eric Eitrheim	2012-2017	Associate Professor, Central Oklahoma University
	Maurice Payne	2014-2019	Scientist, Sandia National Lab
	Madeline Basile	2014-2019	No degree, medical withdrawal
	Jennifer Bjorklund	2015-2020	Postdoc, BNL (co-mentor w/ Sara Mason)
	Mohammad Shohel	2016-2021	Postdoc, OSU, Sandia
	Mikaela Pyrch	2017-2022	Postdoc, UC Berkeley, Asst. Professor, U Alabama
	Lindsey Applegate	2017-2022	Assistant Professor

			Webster University
	Dmytro Kravchuk	2018-2023	Postdoc, ANL
	Logan Augustine	2018-2023	Postdoc, LANL (co-mentor w/ Sara Mason)
	Tiron Jahinge	2019-2024	ORISE Postdoc, FDA
	Samantha Kruse	2020-current	Seaborg Postdoc, INL (co-mentor w/ Len MacGillivray)
	Sarah Scherrer	2021-current	Post-Comprehensive Exam
	Harindu Rajapaksha	2021-current	Post-Comprehensive Exam (co-mentor w/ Sara Mason)
	Vidumini Samarasiri	2021-current	Post-Comprehensive Exam
	Grant Benthin	2021-current	Post-Comprehensive Exam (co-mentor w/ Korey Carter)
	Emma Markum	2022-current	Post-Comprehensive Exam
	Nicole Shapiro	2022-current	(co-mentor w/ David Cwiertny)
	Ecem Celik	2022-current	Post-Comprehensive Exam (co-mentor w/ Korey Carter)
	Cameron Flester	2023-current	Post-Comprehensive Exam
	Rachael Bertolini	2024-current	
	Nicolas Dahlen	2025-current	
Master's candidates	Samangi Abeysinghe	2010-2012	MS program in IT, Queen Mary University of London
	Adam Johns	2016-2018	Engineer, Trussell Technology
	Matt Jubinsky	2017-2019	Argonne National Laboratory
	Maggie Carolan	2018-2021	Tetra Tech Consulting
	Seth Van Helten	2019-2021	Fabric8Labs
Postdocs	Daniel Unruh	2011-2014	Core Res. Scientist, UI
	Rebecca Laird	2014-2015	McMillan Publishing
	Andrew Nelson	2016	Scientist Sandia Nat. Lab.
Bachelors Degree	Eric Jetter	2011	
	Erin Flores	2011-2013	Chemist, MVR Blood Center
	Amy Donovan	2012	Chemist, MVR Blood Center
	Stephen Joseph	2012	High-school science teacher
	Jeffery Miller^	Summer 2012	
	Anna Libo	2011-2013	Chemist, General Electric
	Kyle Gojdas	2011-2013	
	Melissa Fairley	2011-2013	Ph.D. U. Arizona 2018, LANL Staff Scientist
	Ben Worrell	Summer 2013	ISU Engineering
	Laura Streicher	2013	
	Jacob Ertman	2011-2014	
	Madeline Basile	2012-2014	Ph.D. Program, U. Iowa
	Samuel Miller	2013-2014	Ph.D. Wash. St.
	Andrew Kral^	2013-2014	Law School, U Chicago
	Shiquin He	2013-2014	
	Rachel Monroe	summer 2014	SROP student
	Avery Fordham	summer 2014	PNNL
	Brittany Cassell	2013-2015	New York Art Institute
	Diego Cesar De Andrade	Summer 2015	Brazilian Exchange program
	Taylor Buresh	Summer 2015	NNI REU, UI Public Health
	Jeremy Hutton	2014-2015	
	Adam Johns^	2013-2016	MS UI Engineering

	Steven Tucker	2015-2017	Corning Laboratory, NY
	Maggie Schnell	2016-2017	Food Testing/Safety
	Rachel Roberman	2016	
	David Layfette	Summer 2016	NNI REU, PhD UW Madison
	Mackenzie Cole	Summer 2016	
	Lindsay Floryance[^]	2015-2017	UI Pharmacy School
	Samantha Mackin	2015-2017	
	Jeffrey Nassif	2016-2018	EMT
	Doory Dan	Summer 2017	
	John Houston	Summer 2017	NNI REU
	Zindzi Thompson	Summer 2017	Meharry Medical College
	Kathia Morales Santiago	Summer 2018	SROP student
	Erica Cole	2015-2019	Founder No Limbits
	Vincent Parra	2016-2019	Integrated DNA Technologies
	Cyrus Mansouri	2016-2019	UI Dental School
	Erik Ovrom	2018-2019	Fulbright, M.D. Mayo Clinic
	Samantha Kruse	Summer 2019	Ph.D. program U Iowa
	Anamar Blanes	2017-2020	Ph.D. program Georgetown
	Allison Peroutka	2018-2020	Ph.D. program Colorado Mines
	Alessandra Dutra	2019-2020	Current UI student
	Jay Williams	2018-2021	PAE National Security Solutions
	Gabriela Moya	2020-2021	
	Maguire Kasperski	2019-2022	
	Jack A. Smith[^]	2019-2022	
	Elias Mpundu	2019-2022	Integrated DNA Technologies
	Nicholas Dahlen	2019-2022	M.S. MSU; Ph.D. program, Iowa
	Esmee Belzer	2021-2022	Ph.D. program, Notre Dame
	Haley Lightfoot[^]	2020-2023	Ph.D. program, Michigan St.
	Ryleigh Mulcahey	2022-2023	
	Ellie Turk	2022-2023	
	Rachael Bertolino	2023	Ph.D. program, Iowa
	Ethan Oehlert	2023	M.D. program, Mayo Clinic
	Carter Swanson	2023-2024	
	Ferris Bissen	2022-2024	Ph.D. program, Michigan St.
	Rio de los Santos	2024	
	Juliana Karl	2024	
	Maianh Nguyen	2022-current	
	Ben Mullen	2023-current	
	Sarah McGee	2023-current	
	Asher Motes	2023-current	
	Parker Nicks	2024-current	
	Donald Roberts	2025-current	
	Klaertje Hesselink	2025-current	
	Alex Quast	2025-current	
High School	Seyvonne Ip	Summer 2014	SSTP student[+]
	Beining Zhang	Summer 2015	SSTP student

[^]Iowa Center for Research by Undergraduates Fellow, NNI = UI Nanoscience and Nanotechnology Institute, [+]SSTP = UI Secondary Student Training Program, SROP = UI Summer Research Opportunity Program

3. Teaching Innovation

Forbes

- Created the Radiochemistry Graduate Certificate program (2023-2025) with Dustin May (SHL) and Korey Carter (UI Chemistry) and support from the Association of Public Health Laboratories and the Center for Disease Control and Prevention.
- Developed active learning strategies for Inorganic Chemistry CHEM:3250 including flipped classroom design and classroom activities, course structure in Top Hat (2013-2016; 2021)
- Developed meaningful learning discussion activities for CHEM:1120 (Spring 2021) with Lindsey Applegate as part of her Practicum of College Teaching Course.
- Principles of Chemistry I redesign team 2019-2021.
- Faculty fellow in the Learning Design Collaboratory to develop new strategies for Principles of Chemistry I CHEM:1110 (2018-2019)
- Developed Discussion activities for CHEM:1110 focused on meaningful learning (2018-2019)

SCHOLARSHIP

1. Peer Reviewed Journal Publications

University of Iowa Publications

121. Kruse, S.J., S. K. Scherrer, G. P. Holmbeck, J. A. LaVerne, **T. Z. Forbes*** "The inorganic chemist's guide to actinide radiation chemistry: A review." *Accepted* (2025) *Inorganic Chemistry Frontiers*

120. Samarasiri, V.S. H. Rajapaksha, S. McGee, **T. Z. Forbes*** "Formation of U(VI) peroxide nanoclusters from radical cascade reactions." *Accepted* (2025) *Dalton Transaction*

119. Kruse, S. J., **T. Z. Forbes**, L R. MacGillivray* "Effects of Ionizing Radiation on Halogen-Bonded Dipyridyl-Naphthalenediimide Cocrystals." *Accepted* (2025) *Crystal Growth & Design*

118. Scherrer, S., **T. Z. Forbes*** "Enhanced direct air capture by uranyl superoxide: A comprehensive study of the carbonation reactions." *Accepted* (2025), *Materials Chemistry A*

117. Rajapaksha, H., Kruse, S. J., J.A. LaVerne, S.E. Mason, **T. Z. Forbes*** "Radiation-effects in uranyl tetrachloro coordination compounds: Impacts of lattice water." (2025) *Inorganic Chemistry* 64, 9652-9661.

116. Kumar, A., R. R. Golwankar, M. M. F. Pyrch, K. P. Carter, A. G. Oliver, V. W. Day, **T. Z. Forbes***, and J. D. Blakemore*. "Macrocyclic control of electron transfer to high valent uranium in heterobimetallic complexes." (2025), *Dalton Transactions* 54, 8061-8075.

115. Samarasiri, V.S., S. McGee, and **T. Z. Forbes*** "Direct polymer coating to modify water uptake and selectivity within metal organic nanotubes." (2025) *Advanced Materials Interfaces* 12, 2400731.

114. Jahinge, T.H. L., and **T. Z. Forbes*** "Investigating the Influence of Pore Wall-Water Interactions on Proton Conductivity within Metal-Organic Nanotubes using electrochemical impedance." (2025) *Crystal Research and Technology,* 60, 2400181

113. Jahinge, T.H.L., V. S. Samarasiri, and **T. Z. Forbes*** "Water networks within metal organic nanotubes: Assessment of techniques to understand structure and properties." (2024) *European Journal of Inorganic Chemistry,* 27, e202400327.

112. Benthin, G. C., H. Rajapaksha, E. L. Markun, S.E. Mason and **T. Z. Forbes*** "Probing the Protonation and Stability of Heptavalent Neptunium with Computational Guidance." (2024) *Dalton Transactions,* 3, 16170-16185

111. Scherrer, S.K., H. Rajapaksha, D.V. Kravchuk, S.E. Mason and **T. Z. Forbes***, "Impacts of Trace Level Chromium on Formation of Superoxide within Uranyl Triperoxide Complexes." (2024) *ChemComm (Invited as part of 60th Anniversary Collection)* 60, 10584-10587

110. Kruse, S. J., P. LeMagueres, E. Reinheimer, **T. Z. Forbes**, and L. R. MacGillivray "Structural integrity of symmetric and unsymmetric bis-pyridyl ethylene powders exposed to gamma radiation." (2024) *Crystal Growth and Design* 24, 8899–8906

109. George III, G. C., S. J. Kruse, **T. Z. Forbes**, and K M. Hutchins "Of-the-shelf thermosalience of anthracene-9-thiocarboxamide." (2024) *ChemComm* 60, 7697-7700

108. Kruse, S. J., H. Rajapaksha, J. A. LaVerne, S.E. Mason, and **T. Z. Forbes***, "Radiation-Induced Defects in Uranyl Trinitrate Solids", (2024) *Chemistry -A European Journal* 30, e202400956.

107. Scherrer, S., S. M. Greer, H. Rajapaksha, B. W. Stein* and **T. Z. Forbes*** "Superoxide Radicals in Uranyl Peroxide Solids: Lasting Signatures Identified by Electron Paramagnetic Resonance Spectroscopy" (2024) *Angewandte Chemie* 136, e202400379.

106. Herder, J. A., S. J. Kruse, A. D. Nicholas, **T. Z. Forbes**, E. D Walter, H. Cho, C. L. Cahill "Systematic study of solid-state U(VI) photoreactivity: Long-lived radicalization and electron transfer in uranyl tetrachloride." (2024) *Inorganic Chemistry* 53, 3397-3406.

105. Rajapaksha, H. G. Benthin, E.L. Markun, S.E. Mason, and **T. Z. Forbes***, "Synthesis, characterization, and Density Functional Theory investigation of $(CH_6N_3)_2[(NpO_2)Cl_3]$ and $Rb[(NpO_2)Cl_2(H_2O)]$ chain structures", (2024) *Dalton Transactions* 53, 3397-3406.

104. Kravchuk, D. V., L. J. Augustine, M.M.F. Pyrch, G. C. Benthin, H. Rajapaksha, S. E. Mason, E. R. Batista, P. Yang and **T. Z. Forbes*** "Insights into the mechanism of neptunium oxidation to the heptavalent state", (2024) *Chemistry – A European Journal* 30, e202304049.

103. Jahinge, T. H. L., M. K. Payne, D. K. Unruh, A. Jayasinghe, W. H. Casey, P. Yu and **T. Z. Forbes***. "Characterization of Water Structure and Phase Behavior Within Metal Organic Nanotubes." (2023) *Langmuir* 39, 18899-18908.

102. Rajapaksha, H. G. Benthin, D. V. Kravchuk, H. Lightfoot, S.E. Mason, and **T. Z. Forbes***, "Three-Dimensional Non-Covalent Interaction Network within $[(NpO_2)Cl_4]^{2-}$ Coordination Compounds: Influence on Thermochemical and Vibrational Properties", (2023) *Inorganic Chemistry,* 62, 17265-17275.

101. Hutchison, D.C., D.V. Kravchuk, H. Rajapaksha, S. Stegman, **T. Z. Forbes** and R. E. Wilson "Synthesis of Li_2NpO_4 and Li_4NpO_4, from aqueous lithium hydroxide solutions under mild hydrothermal conditions and determination of their single-crystal structures." (2023) *Inorganic Chemistry,* 62, 16564-16573.

100. Kruse, S. J, H. Rajapaksha, L. R. MacGillivray, **T. Z. Forbes,*** J. A. LaVerne* "Atomistic-level effects of noncovalent interactions and crystalline packing for organic material structural integrity upon exposure to gamma radiation." (2023) *Chemistry – A European Journal*, 29, 64, e202302653

99. Rajapaksha, H. S.E. Mason, and **T. Z. Forbes***, "Synthesis, characterization, and Density Functional Theory Investigation of the $[(UO_2)Cl_4H_2O]^{2-}$ Complex", (2023) *Inorganic Chemistry* 62, 35, 14318-14325.

98. Rajapaksha, H., L. J. Augustine, S. E. Mason, and **T. Z. Forbes*** "An experimental and computational effort to determine the formation enthalpy and vibrational properties of solid-state uranyl halides and its influence by hydrogen bonds." (2023) *Angewandte Chemie International Edition (designated VIP by the editors)*, 33, e202305073

97. Augustine, L. J., M.M.F. Pyrch, D. V. Kravchuk, J.M. Williams, S.E. Mason, and **T. Z. Forbes***. "Density Functional Theory Guided Investigation of Ligand-Induced Neptunyl-Neptunyl Interactions." (2023) *European Journal of Inorganic Chemistry,* 26, e202200693

96. Augustine, L. J., J. M. Kasper, **T. Z. Forbes**, S. E. Mason, E. R. Batista, P. Yang. "Influencing properties of the neptunyl (V, VI) cations with electron-donating and withdrawing Groups." (2023) *Inorganic Chemistry*, 62, 6055-6064.

95. Kruse, S J., L. C. MacGillivray and **T. Z. Forbes***. "Effects of Gamma Radiation on Single- and Multicomponent Organic Crystalline Materials." (2023) *Crystal Growth and Design* 23, 3357-3366.

94. Jahinge, T.H.L., D.K. Unruh, and **T. Z. Forbes***. "Heterometallic uranyl (hydroxyethyl)iminodiacetic acid (heidi) complexes: Molecular models for complex speciation." (2023) *European Journal of Inorganic Chemistry,* 26, e202200791.

93. Augustine, L. J., H. Rajapaksha, **T. Z. Forbes***, and S. E. Mason* "Periodic Density Functional Theory Calculations of Uranyl Tetrachloride Compounds Engaged in Uranyl-Cation and Uranyl-Hydrogen Interactions: Electronic Structure, Vibrational, and Formation Energy Analysis", (2023) *Inorganic Chemistry,* 62, 372-380.

92. Meza, I., J. Gonzalez-Estrella, P. C. Burns, V. Rodriguez, G. Sigmon, J. Szymanowski, **T. Z. Forbes****, L. Applegate, A.-M. S. Ali, P. Lichtner, and J. M. Cerrato* "Solubility and thermodynamic investigation of meta-autinite group uranyl arsenate solids with monovalent cations sodium (Na) and potassium (K)." (2023) *Environmental Science & Technology,* 57, 255-265.

91. Applegate, L. M., V. S. Samarasiri, J. Leddy, and **T. Z. Forbes***. "Impacts of surface adsorption on water uptake within a metal organic nanotube (MONT) material." (2022) *Langmuir,* 38, 14025-14035.

90. M. Carolan, D. May, A. DeSalvo, H. Gonzalez-Ribot, D. Thompson, D. M. Cwiertny, and **T. Z. Forbes*** ^{226}Ra and ^{228}Ra Activity and Inorganic Contaminant Mixtures in Iowa Private Drinking Water Wells" (2022) *AWWA Water Science*, 4, e1311

89. Shaikh, N., J. Qian, A. Peroutka, M. Carolan, H. Phan, J. Lezama-Pacheco, D. M. Cwiertny, **T. Z. Forbes*****, A. J. Haes, and J. M. Cerrato*. "U(VI) binding onto phosphonate functionalized electrospun polymers." (2022) *Journal of Environmental Chemical Engineering,* 10, 108448.

88. Pyrch, M. M. F., J. Bjorklund, J. M. Williams, M. Kasperski, S.E. Mason, and **T. Z. Forbes***. "Investigations of the Cobalt Hexamine Uranyl Carbonate System: Understanding the Influence of Charge and Hydrogen Bonding on the Modification of Vibrational Modes in Uranyl Compounds." (2022), *Inorganic Chemistry*, 61, 15023-15036.

87. Shohel, M., J.A. Smith and **T. Z. Forbes*** "Cr^{3+} incorporation into Keggin cluster to form $[Al_{25.7}Cr_{6.3}O_8(OH)_{60}(H_2O)_{28}(SO_4)_2]^{16+}$ polycation." (2022), *Inorganic Chemistry Communications,* 141, 109519

86. Shohel, M., K.K. Ray, A. V. Tivanski, N. E. B. McAdams, A. M. Bancroft, B. D. Cramer, and **T. Z. Forbes*** "Nanomechanical variability in the early evolution of vertebrate dentition." (2022) *Scientific Reports* 12, 10203.

85. Kravchuk, D. V. and **T. Z. Forbes*** "Mechanochemical activation and oxidation of $U(IV)O_2$." (2022) *ChemComm (invited article for Pioneering Investigators Issue)*, 58, 4528-4531.

84. Pyrch, M. M., L. J. Augustine, J. M. Williams, S.E. Mason and **T. Z. Forbes***. "Use of vibrational spectroscopy to identify the formation of neptunyl-neptunyl interactions: A paired Density Functional Theory and Raman spectroscopy study." (2022) *Dalton Transactions (invited article - listed as Hot Paper)*, 51, 4772-4785.

83. Kravchuk, D. V. and **T. Z. Forbes*** "Mechanochemical synthesis of crystalline U(VI) triperoxide solids." (2022) *CrystEngComm (invited article)*, 24, 775-781.

82. Shohel, M.,* J. A. Smith, M. E. Carolan, and **T. Z. Forbes*** "Thermal aging of heteroatom substituted Keggin type aluminum oxo polycation solutions : Aggregation behavior and impacts on humic acid and turbidity removal" (2022) *Environmental Science and Technology -Water,* 2, 22-31.

81. Kravchuk, D.V. and **T. Z. Forbes*** "Thermodynamics and Chemical Behavior of Uranyl Superoxide at Elevated Temperatures." (2022) *ACS Materials Au*, 2, 33-44.

80. Velasco, C. A., A. J. Brearley, J. Gonzales-Estrella, A.-M. S. Ali, M. I. Meza, S. E. Cabaniss, B. M. Thomson, **T. Z. Forbes******, and J. M. Cerrato. "From Adsorption to Precipitation of U(VI): What is the Role of pH and Natural Organic Matter" (2021) *Environmental Science & Technology*, 55, 16246-16256.

79. Williams, J. M., M. M. Pyrch, D.K. Unruh, H. Lightfoot, and **T. Z. Forbes*** "Influence of heterocyclic N-donors on the structural topologies and vibrational spectroscopy of uranyl selenate phases." (2021) *Journal of Solid-State Chemistry*, 304, 122619.

78. Kravchuk, D.V. N.N. Dahlen, S. J. Kruse, C.D. Malliakas, P.M. Shand, and **T. Z. Forbes*** "Isolation and reactivity of uranyl superoxide." (2021) *Angewante Chemie International Edition* (Listed as Hot Paper) 60, 15041-15048.

77. Payne, M. K., L. Applegate, P. Singh, G. Crull, A.B. Grafton, C.M. Cheatum, and **T.Z. Forbes*** "Selectivity for water isotopologues within metal organic nanotubes." (2021) *RSC Advances,* 11, 16706-16710.

76. Bjorklund, J., M. Shohel, J. W. Bennett, J. A. Smith, M. E. Carolan, E. Hollar, **T. Z. Forbes****, S. E. Mason* "Density functional theory and thermodynamics analysis of MAl_{12} Keggin substitution reactions: Insights into ion incorporation and experimental confirmation." (2021) *Journal of Chemical Physics* (special edition in honor of women in physical chemistry) 154, 064303.

75. Shohel, M., Bjorklund, J. L., Kravchuk, D.V., Orvum, E., Mason, S.E. and **T.Z. Forbes*** "Formation of nanoscale $[Ge_4O_{16}Al_{48}(OH)_{108}(H_2O)_{24}]^{20+}$ from condensation of ε-$GeAl_{12}$ Keggin polycations." (2021) *Angewante Chemie International Edition* (Listed as Hot Paper) 133, 8837-8841.

74. Peroutka, A. A., M. M. Pyrch, J. M. Williams, M. K. Payne, S. Macklin, and **T. Z. Forbes*** Exploring competitive metal binding and crystallization of UO_2^{2+} and Cu^{2+} tetrahydrofuran-2, 3, 4, 5-tetracarboxylic acid complexes" (2021) *Polyhedron,* 194, 114904-114015.

73. Blanes Diaz, A., D.V. Kravchuk, A. A. Peroutka, E. Cole, M. Basile, and **T.Z. Forbes***. "Photoinduced transformation of uranyl nitrate crown ether compounds." (2021) *European Journal of Inorganic Chemistry,* 2021, 166-176.

72. Shohel, M., Bjorklund, J. L., Orvum, E., Mason, S.E. and **T.Z. Forbes*** "Ga^{3+} incorporation into Al_{13} Keggin polyoxometalates and the formation of δ-$GaAl_{12}^{7+}$ and $Ga_{2.5}Al_{28.5}^{19+}$." (2020) *Inorganic Chemistry,* 59, 10461–10472.

71. Shohel, M., N.E.B. McAdams, B. D. Cramer*, **T. Z. Forbes*** "Ontogenetic variability in crystallography and mosaicity of conodont apatite: Implications for microstructure analysis and the use of conodonts in paleothermometry and geochemistry." (2020) *Royal Society Open Science,* 7, 200322-200334.

70. Kravchuk, D. V., A. Blanes Diaz, E. A. Mpundu, M. E. Carolan, D.M. Cwiertny, and **T.Z. Forbes***. "Uranyl speciation on the surface of amidoximated polyacrylonitrile mats." (2020) *Inorganic Chemistry* 59, 8134-8145.

69. Applegate, L.C. and **T.Z. Forbes***. "Controlling water structure and behavior: design principles from metal organic nanotubular materials." (2020) *CrystEngComm* 22, 3406-3418. (Invited highlight – listed as HOT article)

68. Pyrch, M. M., D. Parr, J. Bjorklund, J. M. Williams, S.E. Mason, J. Leddy and **T.Z. Forbes***. "Impacts of hydrogen bonding interactions with Np (V/VI)O_2Cl_4 complexes: vibrational spectroscopy, redox behavior, and computational analysis." (2020) *Dalton Transactions,* 49, 6854-6866.

67. Pyrch, M. M., J. M. Williams, M.W. Kasperski, and **T.Z. Forbes*** "Synthesis and Characterization of actinyl(VI) tetrahalide coordination compounds containing 2,2'-Bipyridine." (2020) *Inorganica Chemica Acta*, 508, 119628.

66. Johns, A. J., J. Qian, M. Carolan, N. Shaikh, J. M. Cerrato, **T.Z. Forbes****, and D. M. Cwiertny* "Functionalized electrospun polymer nanofibers for treatment of water contaminated with uranium." (2020) *Environmental Science: Water Research & Technology,* 6, 622-634.

65. Kravchuk, D. V. and **T. Z. Forbes*** "In Situ Generation of organic peroxide to create a nanotubular uranyl peroxide phosphate." (2019) *Angewandte Chemie International Edition,* 51, 18429-18433.

64. Pyrch, M. M., J. M. Williams, and **T. Z. Forbes*** "Exploring crown-ether functionalization on the stabilization of hexavalent neptunium." (2019) *ChemComm* 55, 9319-9322.

63. Bjorklund, J.L., M. M. Pyrch, M. C. Basile, S.E. Mason, and **T. Z. Forbes*** "Actinyl-cation interactions: experimental and theoretical assessment of $[Np(VI)O_2Cl_4]^{2-}$ and $[U(VI)O_2Cl_4]^{2-}$ systems." (2019) *Dalton Transactions* 48, 8861-8871.

62. Bjorklund, J. L., J. W. Bennett, **T.Z. Forbes****, and S. E. Mason* "Modeling of MAl_{12} Keggin heteroatom reactivity by anion adsorption." (2019) *Crystal Growth and Design* 19, 2820-2829

61. Jayasinghe, A., L. Applegate, D. K. Unruh, and **T. Z. Forbes***. "Utilizing autoxidation of solvents to promote the formation of uranyl peroxide materials." (2019) *Crystal Growth and Design*, 19, 1756-1766

60. Flynn, S., L., K. von Gunten, T. Warchola, **T. Z. Forbes******, K. O Konhauser, G. G. Goss, J. W. Martin, D. S. Alessi* "Characterization and implications of solids associated with hydraulic fracturing flowback and produced water from the Duvernay Formation, Alberta, Canada." (2019) *Environmental Science: Processes and Impacts* 21, 242-255.

59. Carter, K. P., J. Jian, M. M. Pyrch, **T. Z. Forbes***, R. J. Abergel, W. A. de Jong, J. K. Gibson "Reductive activation of the neptunyl and plutonyl oxo species with a hydroxypyridinone chelating ligand." (2018) *ChemComm* 54, 10698-10701.

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57. Lu, G., A. J. Haes*, and **T.Z. Forbes*** "Detection and identification of solids, surfaces, and solutions of uranium using vibrational spectroscopy." (2018) *Coordination Chemistry Reviews* 374, 314-344.

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55. Basile, M., E. Cole and **T.Z. Forbes*** "Impacts of oxo interactions within neptunyl crown ether complexes." (2018) *Inorganic Chemistry,* 57, 6016-6028.

54. Jayasinghe, A., M. Payne, D. Unruh, A. Johns, J. Leddy, and **T.Z. Forbes*** "Diffusion and selectivity of water confined within metal-organic nanotubes." (2018) *Journal of Materials Chemistry A,* 6, 1531-1539.

53. Payne, M., R. Laird, T. Buresh, and **T.Z. Forbes*** "Use of zwitterionic ligands in uranyl hybrid materials: Explorations on the structural features that control water ordering and mobility." (2017) *Crystal Growth and Design*, 17, 6498-6509.

52. Bennett, J. W., J. L. Bjorklund, and **T.Z. Forbes**** and S. E. Mason "Systematic study of aluminum nanoclusters and anion adsorbates." (2017) *Inorganic Chemistry*, 56, 13014-13028.

51. Basile, M., D. K. Unruh, E. Cole, L. Streicher, and **T.Z. Forbes*** "Spectral analysis of the uranyl squarate and croconate system: Evaluating differences between the solution and solid-state phases." (2017) *Crystal Growth and Design,* 17, 5330-5341.

50. Jayasinghe A., M. Payne, and **T.Z. Forbes*** "Synthesis and characterization of heterometallic uranyl pyridinedicarboxylate compounds." (2017) *Journal of Solid State Chemistry*, 254 25-31.

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47. de Groot, J., B.A. Cassell, M. Basile, T. Fetrow, and **T.Z. Forbes*** "Charge-assisted hydrogen bonding and crystallization effects within U(VI) glycine and formate compounds." (2017) *European Journal of Inorganic Chemistry*, 2017, 1938-1946.

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45. Eitrheim, E. S., D. May, M. K., Schultz, **T.Z. Forbes*** and A. W. Nelson "Disequilibrium of naturally occurring radioactive materials (NORM) in drill cuttings from a horizontal drilling operation." (2016) *Environmental Science and Technology Letters* 3, 425-429.

44. Jayasinghe, A., S.H. Saltzman, and **T.Z. Forbes*** "Metal substitution into metal organic nanotubes: Impacts on solvent uptake and stability." (2016) *Crystal Growth and Design* 16, 7058-7066.

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41. Nelson, A.W. A. Johns, E. S. Eitrheim, A. W. Knight, M. Basile, A. Bettis III, M. K. Schultz and **T.Z. Forbes*** "Partitioning of naturally-occurring radionuclides (NORM) in Marcellus Shale produced fluids influenced by chemical matrix." (2016) *Environmental Science: Processes and Impacts* 18, 456-463.

40. Cole, E., E. Flores, M. Basile, A. Jayasinghe, J. de Groot, D. K. Unruh, and **T.Z. Forbes*** "Directing dimensionality in uranyl malate and copper uranyl malate compounds." (2016) *Polyhedron* (Special Issue on Undergraduate Research) 114, 378-384.

39. Lu, G., **T.Z. Forbes****, and A. J. Haes "Evaluating Best Practices in Raman Spectral Analysis for Uranium Speciation and Relative Abundance in Aqueous Solutions." (2016) *Analytical Chemistry* 88, 773-780.

38. Knight, A.W., A.W. Nelson, E. S. Eitrheim, **T. Z. Forbes******, and M. K. Schultz* "A chromatographic separation of neptunium and protactinium using 1-octanol impregnated onto a solid phase support." (2015) *Solvent Extraction and Ion Exchange* 307, 59-67.

37. Corum, K, M. Fairley, D. K. Unruh, M. K. Payne, **T.Z. Forbes*** and S. E. Mason "Characterization of phosphate and arsenate adsorption onto Keggin-type Al_{30} cations by experimental and theoretical methods." (2015) *Inorganic Chemistry* 54, 8367-8374.

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34. Casey, W. H., M. M. Olmstead, C. Hazlett, C. Lamar, and **T. Z. Forbes***** "A new nanometer-size Ga(III)oxyhydroxide cation." (2015) *Inorganics* 3, 21-26.

33. Basile, M., D.K. Unruh, K. Gojdas, E. Flores, L. Streicher, and **T. Z. Forbes*** "Chemical controls on uranyl citrate speciation and the self-assembly of nanoscale macrocycles and sandwich complexes in aqueous solutions." (2015) *Chemical Communications* (Emerging Young Investigator Edition) 51, 5306-5309.

32. Unruh, D. K., J. de Groot, M. Fairley, A. Libo, S. Miller, and **T. Z. Forbes*** "Interplay of condensation and chelation in binary and ternary Th(IV) complexes." (2015) *Inorganic Chemistry* 54, 1395-1404.

31. Nelson, A. W., E. S. Eitrheim, A. W. Knight, D. May, M. A. Merhoff, R. Shannon, R. Litman, W. C. Burnett, **T. Z. Forbes******, and M. K. Schultz "Understand the radioactive ingrowth and decay of naturally occurring radioactive materials in the environment: an analysis of produced fluids from the Marcellus shale." (2015) *Environmental Health Perspectives* 123, 689-696.

30. Basile, M, D.K. Unruh, E. Flores, A. Johns, and **T. Z. Forbes*** "Structural characterization of environmentally relevant ternary uranyl citrate complexes present in aqueous solutions and solid state materials." (2015) *Dalton Transactions* (Special Edition on *f*-element chemistry) 44, 2597-2605.

29. Sahu, S. K., D.K. Unruh, **T.Z. Forbes***, and A. Navrotsky "Energetics of formation and hydration of a porous metal organic nanotube." (2014) *Chemistry of Materials* 26, 5105-5112.

28. Unruh, D.K., A. Libo, L. Streicher, and **T. Z. Forbes*** "Synthesis and characterization of 1-D uranyl thiodigycolate coordination polymers." (2014), *Polyhedron* 73, 110-117.

27. de Groot, J., K. Gojdas, D. K. Unruh, and **T. Z. Forbes*** "Use of charge-assisted hydrogen bonding for the supramolecular assembly of hybrid uranyl materials." (2014) *Crystal Growth and Design* 14, 1357-1365.

26. Abeysinghe, S., K. W. Corum, D. L. Neff, S. E. Mason, and **T. Z. Forbes*** "Contaminant adsorption onto nanoscale particles: Structural and Theoretical Characterization of Cu^{2+} bonding on the surface of the Keggin-type polyaluminum (Al_{30}) molecular species." (2013) *Langmuir* 29, 14124-14134.

25. Unruh, D. K., K. Gojdas, E. Flores, A. Libo, and **T.Z. Forbes*** "Synthesis and structural characterization of hydrolysis products within the uranyl iminodiacetate and malate systems." (2013) *Inorganic Chemistry* 52, 10191-10198.

24. Fairley, M, D. K. Unruh, A. Donovan, S. Abeysinghe, and **T. Z. Forbes*** "Synthesis and characterization of homo- and heteronuclear molecular Al^{3+} and Th^{4+} species chelated by the ethylenediaminetetracetate(edta) ligand." (2013) *Dalton Transactions* 42, 13706-13714.

23. Abeysinghe, S., D. Unruh, and **T.Z. Forbes*** "Surface modification of the Al_{30} Keggin-type polyaluminum molecular clusters." (2013) *Inorganic Chemistry* 52, 5991-5999.

22. Unruh, D. K., K. Gojdas, A. Libo, and **T. Z. Forbes*** "Development of metal-organic nanotubes exhibiting reversible exchange of confined 'ice channels'." (2013) *Journal of the American Chemical Society* 135*,* 7398-7401.

21. Fairley, M., D.K. Unruh, S. Abeysinghe, and **T. Z. Forbes*** "Synthesis and structural characterization of heterometallic thorium aluminum polynuclear molecular clusters." (2012), *Inorganic Chemistry* 51, 9491-9498*.*

20. Abeysinghe, S., D. K. Unruh, and **T. Z. Forbes*** "Crystallization of Keggin-type polyaluminum cations by supramolecular interactions with disulfonate anions." (2012) *Crystal Growth and Design* 12, 2044-2051.

Previous Publications

19. Alessi, D.S., J. E.S. Symanowski, **T. Z. Forbes***, A. N. Quicksall, G.E. Sigmon, P. C. Burns, J. B. Fein "Mineralogic Controls on Aqueous Neptunium(V) Concentrations in Silicate Systems." (2013) *Journal of Nuclear Materials* 433, 233-239.

18. Forbes, T.Z.*, A.V. Radha, and A. Navrotsky "The energetics of nanophase calcium carbonate." (2011) *Geochimica et Cosmochimica Acta* 24, 7893-7905

17. Forbes, T.Z.*, J. Kurzman, R. Sedhedri, and A. Navrotsky "The energetics of La_4LiAuO_8." (2011) *Journal of Materials Research* 26,1188-1192.

16. Forbes, T.Z.*, D. McInnis, P. Horan, T. Devine, and P.C. Burns "Alteration of secondary uranyl mineral analogues in the presence of hydrogen peroxide." (2011) *American Mineralogist* 96, 202-206

15. Forbes, T.Z.*, M. Nyman, M.A. Rodriguiz, and A. Navrotsky "Energetics of Lanthanum Tantalate Materials." (2010) *Journal of Solid State Chemistry* 183, 2516-2521.

14. Radha, A. V., **T. Z. Forbes****,** C. Killian, P.U.P.A. Gilbert, and A. Navrotsky "Crystallization Enthalpies of Synthetic and Biogenic Amorphous Calcium Carbonate." (2010) *Proceedings of the National Academy of Sciences* 107, 16438-16443.

13. Forbes, T.Z.,* and S.C. Sevov "Metal-Organic Frameworks with Direct Transition Metal-Sulfonate Interactions and Charge-Assisted Hydrogen Bonds." (2009) *Inorganic Chemistry* 48, 6873-6878.

12. Forbes, T.Z.* and P.C. Burns "Synthesis, structure, and spectroscopy of $(NpO_2)_2(SO_4)(H_2O)_4$: prevalence of cation-cation interactions and cationic nets in neptunyl sulfate compounds." (2009) *Journal of Solid State Chemistry* 182, 43-48.

11. Forbes, T.Z.,* C. Wallace, and P.C. Burns "Neptunyl compounds: Polyhedra geometries, bond-valence parameters, and structural hierarchy." (2008) *Canadian Mineralogist* 46,1893-1915.

10. Forbes, T.Z.,* J. G. McAlpin R. Murphy, and P.C. Burns "Metal-oxide polyhedra assembled into fullerene topologies." (2008) *Angewandt Chemie International Edition* 47, 2710 – 2711.

9. Forbes, T.Z. * and P.C. Burns "Synthesis, structure determination, and infrared spectroscopy of $Li_4(NpO_2)_4(H_2Si_2O_7)(H_2SiO_4)_2(H_2O)_4$ and $K_3(NpO_2)_3(Si_2O_7)$: First reported Np^{5+} silicate compounds." (2008) *Inorganic Chemistry* 47, 705-712.

8. Forbes, T. Z.,* V. Goss, M. Jain, and P. C. Burns "Structure Determination and infrared spectroscopy of $K(UO_2)(SO_4)(OH)$ and $K(UO_2)(SO_4)(OH)(H_2O)$." (2007) *Inorganic Chemistry* 46, 7163-7168.

7. Forbes, T. Z.* and P. C. Burns "The crystal structures of $X(NpO_2)(PO_4)(H_2O)_3$ (X = K, Na, Rb, NH_4) and their relationship to the autunite group." (2007) *Canadian Mineralogist*, (2007),45(3), 471-477.

6. Kubatko, K. A., **T. Z. Forbes****, A. L. Klingensmith, and P. C. Burns "Expanding the Crystal-Chemistry of Uranyl Peroxides: Synthesis and Structures of Di- and Triperoxodioxouranium(VI) Complexes." (2007) *Inorganic Chemistry* 46, 3657-3662.

5. Forbes, T.Z.*, P.C. Burns, L. Soderholm, and S. Skanthakumar "Synthesis, structure determination, and magnetic susceptibility of Np_2O_5." (2007) *Journal of the American Chemical Society* 129, 2760-2761.

4. Forbes, T.Z *, and P. C. Burns "A neptunyl chloride hydrate containing cation-cation interactions and topographical analysis of neptunyl structural units." (2007) *Journal of Solid State Chemistry* 180, 115-121.

3. Forbes, T. Z.* and P. C. Burns "Synthesis and structure of $Ba(NpO_2)(PO_4)(H_2O)$ and its relationship to the uranophane group." (2006) *American Mineralogist* 91, 1089-1093.

2. Forbes, T.Z.*, P. C. Burns, L. Soderholm, S. Skanthakumar "The crystal structures and magnetic properties of $NaK_3(NpO_2)_4(SO_4)_4(H_2O)_2$ and $Na(NpO_2)(SO_4)(H_2O)$: Cation-cation interactions in a neptunyl sulfate framework*."* (2006) *Chemistry of Materials* 18, 1643-1649.

1. Forbes, T.Z*. and P.C. Burns "Structural Characterization of Np^{5+} sulfate chains structures in $X_4(NpO_2)(SO_4)_2Cl$ (X = K, Rb), $Na_3(NpO_2)(SO_4)_2(H_2O)_{2.5}$, and

$CaZn_2(NpO_2)_2(SO_4)_4(H_2O)_{10}$: Divergence from U^{6+} crystal chemistry." (2005) *Journal of Solid State Chemistry* 178, 3445-3452.

2. Invited Book Chapters

6. **Forbes, T.Z.** and D. K. Unruh "X-ray diffraction analysis" in Analytical Geomicrobiology: A Handbook of Instrumental Techniques., J. Kenney, D. Alessi, H. Veeramani, Editors, Cambridge University Press, Cambridge, UK (2019)

5. **Forbes, T.Z.** "Low-Temperature Geochemistry" in Earth Science Series. Encyclopedia of Geochemistry, W. White, Ed., Springer Publishing, New York, NY (2018)

4. **Forbes, T.Z.** "X-ray diffraction" in Earth Science Series. Encyclopedia of Geochemistry, W. White, Ed., Springer Publishing, New York, NY (2018)

3. **Forbes, T.Z.** "Luminescence" in Earth Science Series. Encyclopedia of Geochemistry, W. White, Ed., Springer Publishing, New York, NY (2018)

2. Eitrheim, E.S., A.W. Knight, M. K. Schultz, **T.Z. Forbes*,** A. W. Nelson "Recent advancements in radiochemistry of elements pertaining to select nuclear materials and wastes." Eds. M. A. Benvenuto, T. Williams, (2017) ACS Symposium Series: Old Elements, New Discoveries. *Oxford University Press, Oxford* 173-194.

1. **Forbes, T. Z**. "Occurrence of Nanomaterials in the Environment" in Nanomaterials in the Environment, S. K Brar, T. C. Zhang, M. Verma, Rao Y. Surampalli, R. D. Tyagi, Eds. (2016) American Society of Civil Engineers, Reston, VA

3. Patents

1. Forbes, T. Z. and D.V. Kravchuk, "Mechanochemical Oxidation Method", Provisional Patent 63292248, January 3, 2022.
2. Forbes, T. Z. and D.V. Kravchuk, "Mechanochemical Oxidation Method", Full U.S. Patent 63292248, submitted December 21, 2023.

4. Conference Proceedings

1. Schultz, Michael K., Daniel J. De Vries, and **T.Z. Forbes.** "Development of an interdisciplinary curriculum in radiochemistry at the University of Iowa." International Nuclear Fuel Cycle Conference Proceedings (2013).

5. Grants Funded

a. External

Source: US Department of Homeland Security
Amount: $900,000
Period: 10/01/2024-09/30/2027
Title: Identification of Free Radical Based Spectroscopic Signatures in Nuclear Materials Using Electron Paramagnetic Resonance and Resonance Raman Spectroscopies
Role: Co-PI (PI Korey Carter)

Source: Carver Trust Foundation
Amount: $678,755
Period: 05/01/2024-04/30/2025

Title: Enhancing Radiochemistry Capabilities at the University of Iowa
Role: PI (Co-PIs Scott Daly and Korey Carter)

Source: DHHS, Centers for Disease Control & Prevention
Amount: $5,300,176
Period: 09/25/2023-06/30/2027
Title: APHL Radiochemistry Certificate Program
Role: Co-Investigator (PI – Dustin May; SHL)

Source: DOE Heavy Elements Chemistry
Amount: $535,618
Period: 09/01/2023-08/30/2026
Title: Impacts of free radicals on the chemistry of neptunium and uranium complexes
Role: Principal Investigator

Source: DOE Clean Energy
Amount: $755,418
Period: 10/01/2022- 9/30/2025
Title: Direct air carbon dioxide separation using a uranyl superoxide catalyst
Role: Principal Investigator

Source: NIH T34
Period: 06/01/2021-05/31/2026 (cancelled in 2025; program eliminated)
Amount: $ 3,797,058
Title: MARC at the University of Iowa
Role: Co-PI (Lead-PI: Lori Adams, Biology)

Source: DOE BES Heavy Elements Division
Period: 10/01/2020-03/31/2024
Amount: $510,000
Title: Impact of intermolecular interactions on the spectroscopic signals, energetics, and redox behavior of high valent ^{237}Np.
Role: Principal Investigator

Source: NSF DMR Solid State and Materials Chemistry
Period: 08/01/2020-12/31/2024 (1.5 yr no cost extension)
Amount: $409,931
Title: Confinement effects within metal organic nanotubes: Relationships between hydrophobicity and water structure, diffusion, and selectivity.
Role: Principal Investigator

Source: ACS Petroleum Research Fund – New Directions Grant
Period: 08/01/2019 – 07/31/2022 (2 year no cost extension)
Amount: $110,000
Title: Assessment of Chemical and Physical Changes within Conodont Elements upon Thermal Maturation.
Role: Principal Investigator (Co-PI – Alexei Tivanski)

Source: NRC Faculty Development Award
Period: 08/01/2018 – 07/31/2022 (1 year no cost extension)
Amount: $450,000 (with $165,000 UI cost match)
Title: Continued Advancement of the Radiochemistry Program at the University of Iowa
Role: Co-PI (PI - Jim Gloer)

Source: National Institute of Health
Period: 2/01/2017-01/31/2022
Amount: $1,300,000
Title: "Rapid Uranium Sensors to Minimize Health Impacts in the Navajo Nation"
Role: Co-PI (Amanda Haes- Lead-PI, David Cwiertny–Co-PI, Jose Cerrato–Co-PI)

Source: National Science Foundation Center for Chemical Innovation
Period: 09/01/2016-08/31/2018
Amount: $66,076 (Direct Costs: $50,074)
Title: "Center for Sustainable Materials Chemistry Phase III renewal"
Role: Senior Investigator (Doug Keszler - Director, Oregon State University)

Source: DOE Early Career Award, BES Heavy Elements Division
Period: 07/15/2015-07/14/2020
Amount: $750,000 (Direct Costs: $644,268)
Title: "Assessing intermolecular bonding of the actinyl oxo group through characterization of neptunyl coordination compounds."
Role: Principal Investigator

Source: Nuclear Regulatory Commission
Period: 08/01/2014-07/31/2018
Amount: $522,000 (Direct Costs: $364,940)
Title: "Enhancing Graduate Education in Radiochemistry at the University of Iowa"
Role: Co- Principal Investigator (Michael K. Schultz, Co-PI)

Source: NSF CAREER Award, Division of Solid State and Materials Chemistry
Period: 07/01/2013-06/30/2019 (with 1 year no-cost extension)
Amount: $509,244 (Direct Costs: $352,228)
Title: "Development of metal-organic nanotubes with unique water transport and storage properties."
Role: Principal Investigator

Source: NSF Center for Chemical Innovation
Period: 09/01/2015-08/31/2016
Amount: $66,076 (Direct Costs: $50,074)
Title: "Center for Sustainable Materials Chemistry Phase II Subcontract"
Role: Senior Investigator

Source: Nuclear Regulatory Commission
Period: 04/01/2012-03/31/2016 (one year, no cost extension)
Amount: $600,000 (Direct Costs: $311,588)
Title: "Faculty Development in Radiochemistry at the University of Iowa."

Role: Supported Faculty
Coinvestigators: Mark A. Arnold (PI), Michael K. Schultz (Supported Faculty)

b. Internal

Source: OVPR Interdisciplinary Scholars: Radiochemistry
Period: 08/19/2024-2/18/2026
Amount: $47,000
Title: Evaluating the effects of magnetite radiolytic decomposition on tumor control
Role: Principal Investigator

Source: CGRER Seed Grant
Period: 07/01/2016-06/30/2017
Amount: $35,000
Title: Mobility of Naturally-Occurring Radioactive Materials (NORM) in Bit Cuttings from Unconventional Drilling Operations
Role: Principal Investigator

Source: OVPR Internal Funding Initiative
Period: 02/01/2015-01/31/2016
Amount: $50,000
Title: "Development of Real-Time Sensitive and Selective Radiological Sensors"
Role: Co-Investigator (PI – Amanda Haes, Co-Investigator – David Cwiertny)

Source: OVPR Internal Funding Initiative
Period: 02/01/2014-01/31/2015
Amount: $30,000
Title: "The Hidden Cycle of Soil Minerals: Implications for Carbon Cycling"
Role: Co-Investigator (PI – Michelle Scherer)

Source: Center for Health Effects of Environmental Contamination
Period: 02/01/2014-01/31/2015
Amount: $30,000
Title: Naturally-occurring radioactivity liberated by new natural-gas mining technologies: A pilot study of the geochemical partitioning and potential for radionuclide migration and exposure to higher organisms and humans.
Role: Co-Investigator (PI – Michael Schultz)

Source: Water Sustainability Initiative Seed Grant
Period: 07/01/2013-06/30/2014
Amount: $5,937
Title: Development of nanotube-enabled technologies for water recovery from brines.
Role: Co- Principal Investigator (Dr. David Cwiertny, Co-PI)

Source: CGRER Seed Grant
Period: 07/01/2012-06/30/2013
Amount: $29,875

Title: Investigations of uranium complexation for enhanced transport modeling and environmental remediation of nuclear materials.
Role: Principal Investigator

Source: University of Iowa, Math and Physical Sciences Funding Program
Period: 07/01/2011 – 06/30/2012
Amount: $21,049 (2.1 Person Months/Year)
Title: A novel approach to the structural characterization of amorphous metal hydroxides responsible for the transport of environmental contaminants.
Role: Principal Investigator

6. Invited Lectures and Conference Presentations

a) Invited Lectures at Academic Institutions and National/Regional Meetings

Invited Lectures at Academic and Government Institutions

Forbes, T.Z. "The interaction of free radicals in actinide based solids." Frontiers of Energy Science/Masters of Science Seminar, Idaho National Laboratory, May 7, 2024.

Forbes, T.Z. "Intersection of actinides and high radiation fields: an inorganic chemist's perspective." Radiation Chemistry Seminar Series, Idaho National Laboratory, October 11, 2023 (virtual).

Forbes, T.Z. "Uranyl peroxide formation in the presence of organic molecules. University of Notre Dame, Actinide Center of Excellence, Actinide Science group May 19, 2020 (virtual talk)

Forbes, T.Z. "Hydrogen bonding within actinyl materials: Underexplored intermolecular interactions that control chemical and physical properties." Los Alamos National Laboratory, February 28, 2019

Forbes, T.Z. "Radioactivity in our water: Chemistry, detection, and recovery." Central Oklahoma University November 29, 2018

Forbes, T.Z. "Actinides and confinement: From nanotubes to cucurbiturils." Department of Chemistry, Georgetown University, March 16, 2017

Forbes, T.Z. "Actinides and confinement: From nanotubes to cucurbiturils." Department of Chemistry, University of Missouri, Columbia, March 3, 2017

Forbes, T.Z. "Actinide based metal organic nanotubes with unique water properties." Department of Chemistry, University of Tennessee, February 16, 2017

Forbes, T.Z. "Water storage and transport properties in metal organic nanotubes." Department of Chemistry, Colorado State University, March 29, 2016

Forbes, T.Z. "Water storage and transport properties in metal organic nanotubes." Department of Chemistry, George Washington University, March 4, 2016

Forbes, T.Z. "Water storage and transport properties in metal organic nanotubes." Department of Chemistry, Indiana University, November 11, 2015.

Forbes, T.Z. “Water storage and transport properties in metal organic nanotubes.” Department of Chemistry, Purdue University, November 10, 2015.

Forbes, T.Z. “Water storage and transport properties in metal organic nanotubes.” Department of Chemistry, University of Kentucky, September 18, 2015.

Forbes, T.Z. “Small Nanoparticles in environmental processes, transport, and detection” University of Notre Dame, Department of Civil Engineering and Geological Sciences, January 15, 2015.

Forbes, T.Z. “Synthetic approaches to the crystallization of heterometallic hydrolysis products.” Oregon State University, NSF Center for Sustainable Materials Chemistry, September 15, 2014.

Forbes, T. Z. “Confinement effects in actinide nanomaterials.” Heavy Element Division, Argonne National Laboratory, July 30, 2013.

Forbes, T. Z. “Rational Design of Metal Organic Nanotubes.” University of Nebraska, Lincoln, Department of Chemistry. March 14, 2013

Invited Talks at International/National/Regional Meetings

Forbest, T. Z. “Materials in Extreme Environments: Atomistic-Level Insights on Irradiation of Solid-State Compounds” North American Solid State Chemistry Conference, Ames, IA July 28-31, 2025, Opening Plenary Talk

Forbes, T. Z. “The Radiochemistry Graduate Certificate Program at the University of Iowa” Radiobioassay and Radiochemical Measurements Conference, West Lafayette, IN, October 22, 2024

Kruse, S. J., T.Z. Forbes “Radiation-Induced Defects in Uranyl Trinitrate Solids.” Actinide and Lanthanide Chemistry, Midwest ACS Meeting, Omaha, NE October 13, 2024 (invited but was unable to attend so graduate student gave presentation)

Forbes, T. Z. “Exploring Actinide Free Radical Interactions with Electron Paramagnetic Resonance Spectroscopy and Density Functional Theory Calculations.” ATAS-AnXAS 2024, Kalrsruhe, Germany, October 7-11, 2024

Forbes, T. Z. “Atomistic insights into the formation of radicals within actinide solids: Combined Theory and Experiment.” 4th International Conference on Ionizing Processes, Notre Dame, IN August 11-15, 2024

Forbes, T.Z. “Impacts of Protonation and Ligation in the Stability of Heptavalent Neptunium Coordination Complexes.” International Conference on Coordination Chemistry, Fort Collins CO, July 28 – August 3, 2024.

Forbes, T.Z. “Chemistry with a dash of spice: Intersection of actinides and high radiation fields.” Plenary Lecture, Actinide Conference, Golden, CO, June 2023.

Forbes, T.Z. “From lanthanum tantalates to clusters to peroxides: Intersections with and inspiration from May Nyman.” Spring National American Chemical Society Conference, Indianapolis, IN, March 2023.

Forbes, T.Z. "Identifying structural features that result in activation and coupling of vibrational modes in actinyl materials.", AVS International Symposium and Exhibition, Virtual, October 24-29, 2021. (International)

Forbes, T.Z. "Impact and stabilization of radical species within actinyl systems." Angular Momentum – International *f*-element virtual symposium, May 25, 2021 (International)

Forbes, T.Z. "Identifying structural features that result in activation and coupling of vibrational modes in actinyl materials." Spring/Fall Materials Research Society Meeting, Virtual meeting November 2020.

Forbes, T. Z. "Hydrogen bonding networks within hybrid materials: Water selectivity, structure, and isotope effects." American-Mexican Symposium on Supramolecular Materials Design: From Boron to Hydrogen Bonding, Iowa City, Iowa, November 8, 2019.

Forbes, T.Z. "Relationships between water confined within synthetic nanotubes and nanoporous geologic media." Spring ACS Meeting, Orlando, FL April 3, 2019

Forbes, T.Z., M.K. Payne "Impacts of confined solvent on the thermal expansion behavior of metal organic nanotubes." Midwest Regional ACS Meeting, Ames Iowa, October 21-23, 2018.

Forbes, T.Z., S.E. Mason, and J. Bjorklund. "Formation Pathways and Reactivity of Heterometallic Aluminum Oxyhydroxide Nanoclusters." Goldschmidt Research Conference Boston, MA, August 14, 2018 (International)

Forbes, T.Z. "Interaction of neptunium with crown ether and cucurbituril macrocycles." Rare Earth Research Conference, Ames Iowa, June 20, 2017

Forbes, T.Z. "Assessing subtle variations in actinyl oxo reactivity through characterization of neptunyl complexes." DOE Contractor's meeting. Baltimore, MD April 26, 2017

Forbes T.Z., S.E. Mason "Structural variations in Group 13 heteropolycations." Pacifichem Conference, Honolulu, HI, December 18, 2015. (International)

Forbes, T.Z. "The University of Iowa Radiochemistry Program." Radiobioassay and Radiochemical Measurements Conference, Iowa City, IA, October 27, 2015.

Forbes, T.Z. "Uranyl complexation by organic ligands: Structural, spectroscopic, and theoretical approach." Spring 2015 National American Chemical Society Meeting, Heavy Elements Symposium, Denver, CO, March 2015.

Forbes, T.Z. "Chemistry of nanoconfined water molecules in porous materials: Influence of the uranyl moiety." Inorganic Radiochemistry Symposium, Midwest American Chemical Society Meeting, Columbia, MO, November 13, 2014.

Forbes, T.Z. "Probing hydrogen bonding interactions with the uranyl cation: Combined spectroscopic and structural approach." National American Chemical Society Meeting, Dallas, TX, March 19, 2014.

Forbes, T.Z. "The Plutonium Problem" Department of Energy Contractor's Meeting, Baltimore, MD, April 26-29, 2011.

Forbes, T.Z. and P.C. Burns. "Synthesis and Structure Determination of uranyl peroxide nanoclusters in the presence of structure directing agents." American Geophysical Union Conference, San Francisco, CA, December 2007.

Invited Graduate Student Recruiting Talks

Forbes, T. Z. "The Transport of Nuclear Waste in Natural Aqueous Systems." Grinnell College, March 3, 2022

Forbes, T. Z. "The Transport of Nuclear Waste in Natural Aqueous Systems." University of Dubuque, September 24, 2021

Forbes, T. Z. ""Radioactivity in our water: Chemistry, detection, and recovery." St. Olaf College, November 8, 2018

Forbes, T. Z. "Uranium detection in groundwater systems." University of Wisconsin, La Crosse, April 20, 2018

Forbes, T. Z. "Designing Metal Organic Nanotubes for water purification applications." Northeastern Illinois University, February 6, 2018

Forbes, T. Z. "Designing Metal Organic Nanotubes for water purification applications." University of Nebraska Omaha, October 2, 2017

Forbes, T.Z. "Designing Metal Organic Nanotubes for water purification applications." Coe College, October 13, 2015

Forbes, T.Z. "Designing Metal Organic Nanotubes for water purification applications." Coe College, Summer Research Experience for Undergraduates Seminar, July, 17, 2015

Forbes, T.Z. "Designing Metal Organic Nanotubes for water purification applications." Knox College, Department of Chemistry February 26, 2015

Forbes, T. Z. "Rational Design of Metal Organic Nanotubes." Creighton University, Department of Chemistry February 27, 2014

Forbes, T.Z. "Actinides: Advancing chemistry from the bottom of the periodic table." University of Wisconsin, La Crosse, Department of Chemistry, March 8, 2013

Forbes, T.Z. "Using Nanoparticles to Understand the Environmental Transport of High-level Nuclear Waste in Groundwater." Beloit College, Department of Chemistry, September 30, 2011

Forbes, T.Z. "Actinides in the Environment: Using synthetic compounds to understand environmental transport of nuclear waste." Central College (Pella, IA), Department of Chemistry, February 23, 2011

Forbes, T.Z. "Actinides Among Us: What can synthetic Inorganic Chemistry tell us about the transport of nuclear waste in the environment." Minnesota State University, Mankato, Department of Chemistry November 22, 2010.

b) Contributed Conference Presentations, International

Scherrer, S. T.Z. Forbes “Exploring the use of electron paramagnetic resonance spectroscopy for nuclear forensics applications.” International Conference on Methods and Applications of Radioanalytical Chemistry, Kona, HI March 23-28, 2025.

Forbes, T. Z., D. May, K. P. Carter, **E. Celik** “Development of Graduate Certificate in Radiochemistry at the University of Iowa.” International Conference on Methods and Applications of Radioanalytical Chemistry, Kona, HI March 23-28, 2025.

Forbes, T.Z. “Uranyl superoxides linked to formation of carbonate corrosion products observed on spent nuclear fuel.” Goldschmidt Conference 2021 (Virtual) July 4-9, 2021

Unruh, D. K., M. Basile, A. Johns, E. Flores, and **T. Z. Forbes**. “Structural characterization of environmentally relevant ternary uranyl citrate complexes present in aqueous solutions and solid state materials.” Advancing the Chemistry of the *f*-elements Dalton Discussion 2014, University of Edinburgh, UK, July 28-30.

Knight, A. W., E. S. Eitrheim, A. W. Nelson, D. MacAlister, P. Horwitz, T. Z. Forbes, and M. K. Schultz “Inferred Pa(V) complex formation via selective extraction by aliphatic alcohols.” Advancing the Chemistry of the *f*-elements Dalton Discussion 2014, University of Edinburgh, UK, July 28-30 (Poster).

c) Contributed Conference Presentations, National and Regional

Rajapaksha, H., G. C., Benthin, E. L., Markun, S. E. Mason, T. Z. Forbes “Superoxide as a Key Player in Radical Generation within Alkaline Actinide Systems.” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Flester, C., T. Z. Forbes “Evaluation of free radicals in uranium ore concentrates during thermal preparation of yellowcake.” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Benthin, G. C., H. Rajapaksha, E. L. Markun, T. Z. Forbes “Experimental Insights into Speciation and Reduction of Heptavalent Neptunium in Dynamic pH Environments.” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Shapiro, N. M., T. Z. Forbes, D. M. Cwiertny “Crystal structures of rare earth element-DOTAM complexes and their implications in selective separation of critical materials” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Markun, E. L., A. B. Motes, T. Z. Forbes “Mechanochemical oxidation of uranium oxide phases.” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Samarasiri, V. S., H. Rajapaksha, S. E. Mason, T. Z. Forbes “Impact of free radical initiators on uranyl cations in aqueous conditions: Cascade reactions leading to U(VI) peroxide species” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Forbes, T.Z., S. J. Kruse, H. Rajapaksha, S. C. Scherrer “Radiolysis on actinide coordination compounds: Impacts of free radical chemistry.” Rare Earth Research Conference, Chicago, IL June 15-19, 2025

Carter, K. P. D. May, T. Z. Forbes, E. Celik “Lessons learned from the design and implementation of a graduate certificate program in radiochemistry at the University of Iowa” National American Chemical Society Meeting, San Diego, CA, March 2025

Scherrer, S., C. Gates, H. Rajapaksha, S. Greer, B.W. Stein, T. Z. Forbes “Superoxide radicals in uranyl peroxide solids: Lasting signatures identified by electron paramagnetic resonance spectroscopy.” Midwest Regional ACS meeting, Omaha, NE October 2024.

Flester, C. J., T.Z. Forbes, “Evaluation of free radicals in U(VI) peroxides during thermal decomposition.” Midwest Regional ACS meeting, Omaha, NE October 2024.

Shapiro, N. M., T.Z. Forbes, D. M. Cwiertny “Crystal structures of rare earth element-ligand complexes and their significance for selective recovery.” Midwest Regional ACS meeting, Omaha, NE October 2024.

Samarasiri, V. S., T. Z. Forbes “Evaluation of interactions of uranyl cations under the influence of free radical initiators.” Fall 2024 ACS meeting, Denver, CO, August 2024.

Kruse, S. H. Rajapaksha, J. A. LaVerne, S. E. Mason, T. Z. Forbes “Radiation Induced defects in uranyl trinitrate solids.” International Conference on Coordination Chemistry, Fort Collins, CO July 2024.

Scherrer, S., D. Kravchuk, S. Greer, B.W. Stein, T. Z. Forbes “Exploring the Role of Superoxide in the Reactivity of Uranyl Superoxide.” International Conference on Coordination Chemistry, Fort Collins, CO July 2024

Samarasiri, V. S., T. Z. Forbes “Water uptake kinetics of metal organic nanotubes: Influence of Pore Wall Polarity.” Fall 2023 ACS meeting, San Francisco, CA August 2023.

Jahinge, T. H. L., T. Z. Forbes “Exploring the Temperature – Dependent Hydrogen Bonding Network in Metal Organic Nanotubes with Varying Pore Wall Polarity” Fall 2023 ACS meeting, San Francisco, CA August 2023.

Benthin, G., T.Z. Forbes, K. Carter, “Peroxide mediated oxidation of phosphonates in extractants relevant to spent nuclear fuel reprocessing.” Midwest Regional ACS meeting, Iowa City, IA, October 2022

Kruse, S., T. Forbes, L. MacGillivray. “Stabilization via delocalization: Crystal engineering aromatic organic small molecules for radiation resistant materials.” Midwest Regional ACS meeting, Iowa City, IA, October 2022

Rajapaksha, H., L. Augustine, M. Pyrch, T. Z. Forbes, S.E. Mason. “Paired synthetic and computational efforts exploring hydrogen bonding effects on bonding, electronic structure and spectroscopic signals of uranyl halides.” Midwest Regional ACS meeting, Iowa City, IA, October 2022

Samarasiri, V.S., T. Z. Forbes, “Surface effects and uptake of water within metal organic nanotubes.” Midwest Regional ACS meeting, Iowa City, IA, October 2022.

Jahinge, J. H., T. Z. Forbes “Single crystal proton conduction study in uranium metal organic nanotubes.” Midwest Regional ACS meeting, Iowa City, IA, October 2022.

Scherrer, S., D.V. Kravchuk, T.Z. Forbes, “Reactivity of a uranyl superoxide catalyst for direct air carbon dioxide separations.” Midwest Regional ACS meeting, Iowa City, IA, October 2022.

Kruse, S., T. Z. Forbes, L. MacGillivray, “Effects of high ionizing radiation on organic solid-state materials” Fall ACS Meeting, Chicago, IL August, 2022

Kravchuk, D. V., Forbes, T. Z. “Mechanochemical synthesis of uranyl peroxides: Implications for nuclear fuel reprocessing” Fall ACS Meeting, Chicago, IL August, 2022

Forbes, T. Z. “Impacts of surface chemistry on the kinetics of water uptake in 1-3 metal organic nanotubes.” Fall ACS Meeting, Chicago, IL August, 2022

Forbes, T. Z. “Impacts of Li^+ interactions on the vibrational features of Np(V), Np(VI), and NP(VII) solutions and solid materials.” Fall ACS meeting, Chicago, IL August 2022.

Jahinge, T., Forbes, T.Z. “Effects of temperature on water ordering within metal-organic nanotubes.” Spring ACS Meeting, San Diego, CA, March 2022.

Kravchuk, D. V., Pyrch, M. M., Augustine, L., Mason, S. E., Forbes, T.Z. “Complete vibrational analysis of neptunium(VII) compounds: Point group symmetry challenge” Spring ACS Meeting, San Diego, CA, March 2022.

Pyrch, M. M. F., Kravchuk, D. V., Forbes, T.Z. “Formation of actinyl-cation interactions and the impacts of Li^+ on the actinyl cation vibrational bands in solution” Spring ACS Meeting, San Diego, CA, March 2022.

Forbes, T.Z. “Spectroscopic characterization of actinyl-actinyl interactions in aqueous solutions and solid-state materials” Fall Virtual ACS Meeting, Atlanta, GA, August 2021.

Forbes, T.Z. “Sorption, selectivity, and phase behavior of water confined in 1-D metal organic nanotubes” Fall Virtual ACS Meeting, Atlanta, GA, August 2021.

Applegate, L.C., J. Leddy, T. Z. Forbes “Adsorption of Solvent Mixtures into Metal Organic Nanotubes (MONTs): Solvent selectivity and Uptake Kinetics.” Spring ACS Meeting, Virtual 2021.

Pyrch, M. M., J. M. Williams, J. Bjorklund, D. L. Parr IV, S. E. Mason, J. Leddy, T. Z. Forbes “Chemical behavior of the $Np(V)O_2Cl_4$ complex: Characterization by structural, spectroscopic, electrochemical and theoretical approaches.” Fall ACS Meeting, Virtual 2020

Kravchuk, D.V. and T.Z. Forbes “Spectral Interpretation of U(VI) Bound to Amidoximated Polyacrylonitrile Mats using Uranyl Coordination Compounds.” Fall ACS Meeting, Virtual 2020

Shohel, M., B.D. Cramer, and T. Z. Forbes “X-ray diffraction and Nanoindenation on conodont microfossils revealed variation of Mechano-structural properties along the length of conical elements” GSA Annual Meeting, Phoenix, Arizona, September 21, 2019

Forbes, T.Z. Activation of the actinyl asymmetric stretching band in Raman spectroscopy: How, when, and why.” Spring ACS Meeting, Orlando, FL April 4, 2019

Shohel, M., B.D. Cramer, and T. Z. Forbes “Systematic assessment of crystalline structure along the length of conical conodont microfossils using microfocus X-ray diffraction” GSA Annual Meeting, Indianapolis, Indiana, November 6, 2018.

Pyrch, M. M., J. M. Williams, T. Z. Forbes “Exploring Actinyl Intermolecular Interactions Incorporating Novel Np(V) Molecular Building Units.” Midwest Regional ACS meeting, Ames, IA October 22, 2018

Williams, J. M., M. M. Pyrch, T. Z. Forbes “Uranyl Selenate Coordination Polymers: Interactions with Interstitial N-Donors.” Midwest Regional ACS meeting, Ames, IA October 22, 2018 (poster)

Blanes, A., M.M. Pyrch, L. C. Applegate, and T. Z. Forbes “Synthesis and spectroscopic properties of uranyl molecular compounds containing acetamidoxime.” Midwest Regional ACS meeting, Ames, IA October 22, 2018 (poster)

Applegate, L. C., K M. Santiago, T. Z. Forbes “Exploration of water mobility within metal organic nanotubes.” Midwest Regional ACS meeting, Ames, IA October 22, 2018 (poster)

Peroutka, A. J. Qian, D. Cwiertny, and T. Z. Forbes “Phosphonic Acid Functionalized Electrospun Nanofibers for Uranium(VI) Uptake” Midwest Regional ACS meeting, Ames, IA October 22, 2018 (poster)

Forbes, T.Z. “Continued advancements in the radiochemistry program at the University of Iowa.” (Poster) National ACS Conference, New Orleans, LA March 18-22, 2018

Forbes, T.Z. “Stabilization of neptunyl crown ether complexes: Characterization by spectroscopic and diffraction approaches.” National ACS Conference, New Orleans, LA March 18-22, 2018

Forbes, T.Z. “Sorption kinetics and structural features of water confined in a 1-D metal organic nanotube.” Midwest Regional ACS Conference, Lawrence, KS October 18-20, 2017

Forbes, T.Z. “Chemistry of nanoconfined water molecules in 1-D metal organic nanotubes.” National ACS Conference, San Francisco, CA April, 2017

Basile, M. C., Cole, E. R., Forbes, T.Z. “Investigating the subtle variations in uranyl and neptunyl oxo reactivity through the characterization of crown ether complexes” National ACS Conference, San Francisco, CA April, 2017

Jayasinghe, A., Payne, M., Unruh, D., Forbes, T.Z. “Exploring water selectivity properties and uptake rates of a uranium metal-organic nanotube.” National ACS Conference, San Francisco, CA April, 2017

Payne, M., Jayasinghe, A., Unruh, D., Forbes, T.Z. “Water confinement properties of a metal-organic nanotube.” National ACS Conference, San Francisco, CA April, 2017

Eitrheim, E., Perkins, C.K., Fulton, B., Forbes, T.Z., Keszler, D.A. Anion effect on aluminum hydroxide cluster synthesis. National ACS Conference, San Francisco, CA April, 2017

Forbes, T.Z. “Many Voices in Science” SACNAS national conference, Long Beach, CA, October 13, 2016

Forbes, T.Z. “Synthesis and characterization of mixed metal oxide clusters as precursors for solid state materials.” National ACS Conference, Philadelphia, PA, August 22, 2016

Payne, M., and Forbes, T.Z. “Uranyl hybrid materials: Synthesis and Characterization.” National ACS conference, San Diego, CA, March 15, 2016

Jayasinghe, A., and Forbes, T.Z. “Uranyl peroxide formation in the absence of light.” National ACS conference, San Diego, CA, March 15, 2016

Forbes T.Z., “Supramolecular assembly of metal organic nanotubes with unique water transport properties.” Pacifichem Conference, Honolulu, HI, December 17, 2015. (Poster)

Jayasinghe, A., D. Unruh, A. Kral, and T.Z. Forbes “Selectivity of Uranium Metal Organic Nanotubes for Water” Midwest American Chemical Society Meeting, Columbia, MO November 13, 2014. (Poster)

Basile, M., D. Unruh, A. Johns, K. Gojdas, T. Z. Forbes “Synthesis and Characterization of Uranium-Citrate Compounds and the Analysis of the Solution Chemistry that Influences Uranium Speciation.” Midwest American Chemical Society Meeting, Columbia, MO November 13, 2014. (Poster)

de Groot, J., B. Cassell, and T.Z. Forbes “Uranyl-Amino Acid Crystal Chemistry: From Coordination Complexes to the Supramolecular Assembly of Metal-Organic Materials” Midwest American Chemical Society Meeting, Columbia, MO November 13, 2014. (Poster)

Forbes, T. Z., S.E. Mason, K. Corum. “Exploring contaminant adsorption on the surface of nanoscale particles: A combined experimental and theoretical approach.” Goldschmidt Conference, Sacramento, CA, June 2014.

Forbes, T.Z. and D.K. Unruh. “Supramolecular approach to the synthesis of metal organic nanotubes with unique water exchange properties.” American Chemical Society National Meeting, Indianapolis, IN, September 2013.

de Groot, J., K. Gojdas, D. K. Unruh, and T. Z. Forbes**.** “Actinide amino acid complexes.” American Chemical Society National Meeting, Indianapolis, IN September, 2013.

Unruh, D. K., K. Gojdas, E. Flores, M. Basile, A. Johns, and T.Z. Forbes “Synthesis and characterization of uranyl clusters chelated by carboxylate ligands” American Chemical Society National Meeting, Indianapolis, IN September, 2013.

Corum, K., T.Z. Forbes, and S.E. Mason “Modeling the uptake of oxyanion and cation contaminant species by aqueous aluminum hydroxide nanoparticles.” American Chemical Society National Meeting, Indianapolis, IN September, 2013.

Forbes, TZ. “Investigating the structural nature of amorphous mineral precursors for enhanced understanding of contaminant adsorption and incorporation“ Goldschmidt Conference, Montreal QB, Canada June 2012.

Forbes, T.Z. “Structural characterization of amorphous aluminum hydroxide: implications for contaminant transport.” Geology Society of America National Meeting, Minneapolis, MN, October 9, 2011.

Forbes, T.Z. “Structural characterization of novel aluminum hydroxide nanoclusters as geochemical model compounds for contaminant transport.” American Chemical Society National Meeting, Denver, CO, August, 29, 2011.

Forbes, T.Z. “Exploring the use of heterometallic nanoclusters as geochemical model compounds for the transport of actinides in the environment.” American Chemical Society National Meeting, Denver, CO, August 29, 2011.

Forbes, T. Z. A.V. Radha, and A.Navrotsky. Energetics of nanophase calcium carbonate. American Chemical Society National Meeting, San Francisco, CA, March 22, 2010.

Forbes, T. Z. and P. C. Burns "Neptunyl compounds: Polyhedron geometry, bond valence parameters, and structural hierarchy." Poster Presentation, Actinides Meeting, San Francisco, CA, July 13, 2009.

Forbes, T.Z., P. C. Burns, L. Soderholm and S. Skanthakumar. "Hydrothermal Synthesis and Structure of Np_2O_5." Materials Research Society Meeting, Boston, MA, November 30, 2006.

Forbes, T.Z. and P.C. Burns. "Synthesis of uranyl peroxide nanocluster bearing crystals using organic ligands." 2006 Fall ACS National Meeting, San Francisco, CA, September 10, 2006.

Forbes, T. Z., P.C. Burns, L. Soderholm, and S. Skanthakumar. "The crystal chemistry and magnetic properties of Np(V) sulfates." Materials Research Society Meeting, Boston, MA, December 1, 2005.

Forbes, T.Z. and P.C. Burns. "The Crystal Chemistry of Neptunium Sulfate and Phosphates." Poster Presentation. Notre Dame Environmental Education and Research Symposium. University of Notre Dame, Notre Dame, IN, November 8, 2005.

Forbes, T.Z. and P.C. Burns. "The Crystal Chemistry of Neptunium Sulfate and Phosphates." Poster Presentation. Midwest Solid State Chemistry Conference. University of Notre Dame, Notre Dame, IN, May 27, 2005.

Forbes, T.Z. and P.C. Burns. "The Crystal Chemistry of Neptunium Sulfates and Phosphates." Goldschmidt Conference, University of Idaho, Moscow, ID, May 21, 2005.

d) Internal Seminars and Poster Presentations

Forbes, T.Z. "Spicy Mineralogy: Impacts of radiation on geochemical processes." University of Iowa Department of Earth and Environmental Sciences Seminar, November 12, 2021

Forbes, T.Z. "Chemistry with a dash of spice: Intersection of actinides and high radiation fields." Department of Chemistry Colloquium, September 3, 2021

Forbes, T.Z. "Water storage and transport properties in metal organic nanotubes." Department of Chemistry, University of Iowa Department of Chemical and Biochemical Engineering Graduate Seminar, January 19, 2017

Forbes, T. Z. CLAS Dean's Advisory Board Meeting, September 16, 2016.

Tucker, S., A. Jayasinghe and Forbes, T.Z. "Crystallization of Lanthanum Sulfate compounds." ICRU Fall Undergraduate Research Festival, November 18, 2015.

Forbes, T.Z. "Design and characterization of metal organic nanotubes with unique water exchange properties." Department of Chemistry Colloquium, September 4, 2015.

Forbes, T.Z. "Development of metal organic nanotubes for advanced water purification" NNI REU Seminar, July 23, 2015.

Kral, A., A. A. Jayasinghe, D. K. Unruh, and T. Z. Forbes. "H_2O selectivity in Uranium Metal Organic Nanotubes." University of Iowa Spring Undergraduate Research Symposium, April 2015.

Forbes, T.Z. "Design and characterization of metal organic nanotubes with unique water exchange properties." Inorganic Chemistry Seminar, January 28, 2015.

Johns, A., A. Nelson, and T.Z. Forbes "The fate of radium in unconventional drilling liquid waste." University of Iowa Fall Undergraduate Research Symposium, December, 2014.

Forbes, T.Z. "Development of membrane technology based upon actinide chemistry." Environmental Engineering Seminar, October 24, 2014.

Forbes, T.Z. "How do we build a better membrane for water purification?" Summer Research Opportunities Program Seminar, July 11, 2014.

Miller, S, J. de Groot, and T.Z. Forbes "Coordination of uranyl cations with amino acids" University of Iowa Undergraduate Research Symposium, April 2014

Fairley, M., and T.Z. Forbes. "Heterometallic Actinide clusters." University of Iowa Undergraduate Research Symposium, April 2012.

Forbes, T.Z. "The Transport and Impact of Nuclear Waste in Natural Aqueous Systems." Water Sustainability Seminar, April 17, 2012

Forbes, T.Z. "The Transport and Impact of Nuclear Waste in Natural Aqueous Systems." Superfund and EHSRC Center, January 23, 2012

Forbes, T.Z. "The Plutonium Problem." CGER Advisory Board Meeting, May 16, 2011

Forbes, T.Z. "The Plutonium Problem." Water Sustainability Initiative Advisory Board Meeting April 7, 2011

Forbes, T.Z. "The 'mineralogy' of nuclear waste: Understanding the transport of uranium and neptunium in the environment." Department of Geology Seminar, October 15, 2010

Forbes, T.Z. "Actinides Among Us: What can synthetic Inorganic Chemistry tell us about the transport of nuclear waste in the environment." Environmental Sciences Seminar September 9, 2010

Forbes, T.Z. "Exploring the structural complexities of actinide materials." Department of Chemistry, Inorganic Chemistry Seminar, September 22, 2010.

Forbes, T.Z. "The Prevalence and importance of small nanoparticles (nanoclusters) in aqueous environmental systems: Overview and research goals." Department of Chemistry, Physical and Environmental Chemistry Seminar, August 30, 2010.

SERVICE

1. **Profession**

Service to federal agencies and laboratories

Invited participant in DOE BES CSGB Division workshop on "Redox Chemistry with Heavy Elements: From Biotic Isotope Fractionation to Photocatalysis", August 18-22, 2025, Telluride CO.

Member of the review committee for the Heavy Elements Chemistry Program at Lawrence Berkeley National Laboratory (2025)

Member of the Isotope Science and Engineering Directorate Advisory Board, Oak Ridge National Laboratory (2021-current)

Member of the National Academy of Sciences, Engineering, and Medicine Review Committee of the Continued Analysis of Supplemental Treatment of Low-Activity Waste at the Hanford Nuclear Reservation (2021-2023)

Member of the DOE/NSF Nuclear Science Advisory Committee (2020)

Member of the review committee for the Heavy Elements Chemistry Division at Los Alamos National Laboratory (2019)

Member of a review committee for a DOE Defense Nuclear Nonproliferation R&D program (2020, 2022, 2023, 2024, 2025)

Ad hoc reviewer National Nuclear Security Administration Minority Serving Institution Partnership Program (2020, 2024), Stewardship Science Academic Alliances Program (2021), Nuclear Energy University Program R&D (2022)

Member of the Scientific Advisory Committee of the National Nuclear Security Administration Stewardship Sciences Academic Alliance program: Actinide Center of Excellence (2018 - 2023)

Panel Co-chair for DOE Basic Research Needs Workshop on Synthesis Science May 2-4, 2016 Washington DC

External Peer Reviewer for Department of Energy Proposals - Science Graduate Student Research Program Grants (2018, 2020), Basic Energy Sciences (2013, 2018, 2020, 2021, 2022, 2024), Environmental Management (2023, 2024)

Panel Reviewer for NSF – Division of Solid State and Materials Research (2013, 2015), Major Research Instrumentation (2018), MRSEC preproposals and ad-hoc full proposals (2019), Center for Chemical Innovation (CCI) Program Reviews (2022), Division of Chemical, Bioengineering, Environmental, and Transport Systems (2024)

External Peer Reviewer for NSF – Solid State and Materials Research (2015, 2021), NSF EPSCor Research Fellow (2017), Chemical, Bioengineering, Environmental, and Transport Systems (2014), Geobiology and Low-Temperature Geochemistry Program (2012) and Macromolecular, Supramolecular and Nanochemistry – Division of Chemistry (2010, 2015),

External reviewer for International Grants - The Royal Society University Research Fellowship Program (2024), Research Grants Council of Hong Kong (2018), Helmholtz Association Grant, Germany (2016)

Participant in the NSF workshop on Nanomaterials in the Environment June 2011

Organization of technical session and meetings

Technical session organizer - “Frontiers in Heavy Element Coordination Chemistry” International Conference of Coordination Chemistry, Fort Collins, CO, July 28-August 4, 2024.

General Chair for 2022 Midwest Regional ACS meeting hosted by Iowa Chapter in Iowa City

Session Chair/co-chair for “Lanthanides and Actinide Chemistry” at the Spring 2019 (with Henry La Pierre, Georgie Tech) the Fall 2021 (with Lauren Stevens, Los Alamos National Laboratory) and Fall 2022 (with Suzanne Bart, Purdue and Aaron Tondreau, LANL) National ACS meetings.

Session Chair for Fall 2021 ACS Meeting, “Metal Organic Frameworks”

ACS NUCL Division – Vice Chair 2018, Chair Elect 2019 (PI on ACS Innovative Project Grant for Division Strategic Planning Retreat ($12,000)), Program and Division Chair 2020, Past-Chair 2021. Programming steering committee (2019-2020).

Member of the selection committee for the ACS National Nuclear Chemistry Summer School (2018)

Co-organizer of Spring 2018 National ACS meeting symposia – Division of Nuclear Chemistry “Actinide Complexes and Nanoclusters” with Dr. Karah Knope, Georgetown University

Session Chair for “Solid State Chemistry of the f-Elements” at the Rare Earths Research Conference, June 19, 2017.

Panelist for the American Chemical Society Graduate School Workshop, August 21, 2016, Philadelphia, PA

Organizer of student poster session for Radiobioassay and Radiochemical Measurements Conference, October 25-30, 2015, Iowa City, IA

Co-convener of the “Environmental and Nanominerals” session for Goldschmidt Conference June 5-8, 2014 Sacramento, CA

Co-organizer of Fall 2013 National ACS meeting symposia

Division of Colloid and Surface Chemistry “Behavior of Contaminants at Environmental Interfaces” with Dr. Sara Mason, University of Iowa

Division of Nuclear Chemistry “Actinide Materials” with Dr. Peter Burns, University of Notre Dame

General service to the field

External Peer Reviewer for ACS PRF (2014, 2020), Cottrell College Science Award Proposal (2014), Oak Ridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Awards (2024)

Reviewer for Iowa Space Grant Consortium Scholarships (2017)

Editorial Board Member for *Crystal Growth and Design* (2016-2018; 2021-2023)

Topic Editor for *Crystal Growth and Design* (2014-2016)

Reviewer for Book proposals – *CRC Press* (2021)

External letter writer for promotion and tenure (2018, 2019, 2021-2025)

Peer Reviewer for academic journals

2025 *Dalton Transactions* (2), *PNAS* (1), *Industrial Chemistry & Materials* (1), *Inorganic Chemistry Frontiers* (2), *Chemistry European Journal* (2) *Inorganic Chemistry* (3) *ACS Omega* (1), *European Journal of Inorganic Chemistry* (1) *Crystal Growth & Design* (2) *Journal of the American Chemical Society* (1),

2024 *Inorganic Chemistry* (7), *ChemComm* (5), *Nature Chemistry* (1) *Cell Reports Physical Sciences* (1), *RSC Advances* (3), *Crystal Growth and Design (1) Water Research (1), Crystal Research (1), European Journal of Inorganic Chemistry (2), Chemistry - European Journal (2), Polyhedron* (1), *Dalton Transactions* (3), *Chemical Science* (1), *Angewandte Chemie International Edition* (1)*, Coordination Chemistry Reviews* (1), *CrystEngComm*(2), *ZAAC* (1), *Inorganic Chemistry Frontiers* (1)

2023 *Angewandte Chemie International Edition (2), CrystEngComm (3), Polyhedron (1), Crystal Growth and Design (1) Ecotoxicology and Environmental Safety (1) Inorganic Chemistry (5) Journal of Raman Spectroscopy (1) ChemComm (4) Chemistry of Materials (1), Journal of American Chemical Society (2), RSC Advances (1), Chemical Sciences (1), Nature Chemistry (1), European Journal of Inorganic Chemistry (1)*

2022 *Inorganic Chemistry* (7), *Nature Communications* (1), *Polyhedron* (1), *ChemComm* (3), *Chemistry of Materials* (2), *Nature Chemistry* (1), *Dalton Transactions, Journal of Physical Chemistry (1) European Journal of Inorganic Chemistry (1)*

2021 *CrystEngComm(2), ZAAC(1), Minerals(1), European Journal of Inorganic Chemistry(1), Inorganic Chemistry (3), Inorganic Chemica Acta (2), Dalton Transactions (2) Applied Surface Science (1) ChemComm(1) Journal of the American Chemical Society (1)*

2020 *Chemistry-A European Journal (1) ChemComm(1), Inorganic Chemistry (1), Dalton Transactions (2), Chemical Science (2), Inorganica Chimica Acta (1)*

2019 *ChemComm (4), European Journal of Inorganic Chemistry (1), ACS Omega (1), Inorganic Chemistry (3), ACS Applied Nano Materials (1) Polyhedron (1), Chemistry-A European Journal (2), Langmuir (1), RSC Advances (1), Inorganica Chimica Acta(1), Chemical Science (1), Dalton Transactions (1), Crystal Growth and Design (1)*

2018 *Inorganic Chemistry (5), Polyhedron (4), Nanomaterials (2), Angewandte Chemie (1) CrystEngCom (1), ChemComm(1), European Journal of Inorganic Chemistry (1) Crystal Growth and Design (1)*

2017 *Inorganic Chemistry* (5), *Journal of Crystal Chemistry* (1), *ChemComm* (2), *Journal of Solid State Chemistry* (1), *Environmental Science and Technology* (1), *Nature Communication* (1), *Angewandte Chemie* (1), *New Journal of Chemistry* (2), *ACS Sustainable Chemistry and Engineering* (1), *Advanced Functional Materials* (1), *Journal of the American Chemical Society* (1)*, RSC Advances* (1), *European Journal of Inorganic Chemistry* (2), *Journal of Materials Research* (1), *Journal of Physical Chemistry* A (1), *Nature Chemistry* (1), *Journal of Molecular Structure* (1), *Zeitschrift fuer Kristallographie* (1), *Crystal Growth and Design* (2)

2016 *Crystal Growth and Design* (6) *Journal of Solid State Chemistry* (1), *Dalton Transactions* (1), *CrystEngComm* (4), *ChemComm* (5) *Mendeleev Communications* (1), *Inorganic Chemistry* (5), *RSC Advances* (2), *European Journal of Inorganic Chemistry* (2), *Inorganic Chemistry Frontiers* (1), *Journal of Solid State Chemistry* (1)

2015 *Angewandte Chemie* (1), *Acta Crystallographica Section C* (1), *The Journal of Physical Chemistry* (1), *Journal of Chemical Thermodynamics* (3), *Inorganic Chemistry* (4), *Journal of Solid State Chemistry* (1), *Dalton Transactions* (2), *New Journal of Chemistry* (1), *Environmental Science and Technology* (2), *Chemistry – A European Journal* (1), *Crystal Growth and Design* (4), *PLOS ONE* (2), *ChemComm* (3), *European Journal of Inorganic Chemistry* (1), *Journal of Molecular Structure* (1), *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nanometal Chemistry* (1)

2014 *Inorganic Chemistry* (4), *European Journal of Inorganic Chemistry* (2), *RSC Advances* (1), *American Mineralogi*st (1), *Crystal Growth and Design* (1), *Journal of Solid State Chemistry* (1), *Dalton Transactions* (3), *ChemComm* (2), *PLOS ONE* (1), *Mineralogical Magazine* (1), *Inorganic Chemistry Frontiers* (1)

2013 *Dalton Transactions* (1), *RSC Advances* (3), *Inorganic Chemistry* (3), *New Journal of Chemistry* (1), *Journal of the American Chemical Society* (2), *Environmental Science: Processes and Impacts* (2), *Zeitschrift für Anorganische und Allgemeine Chemie* (1)

2012 *Inorganic Chemistry* (3), *Chemical Geology* (1), *Crystal Growth and Design (1)*, *Geochimica et Cosmochimica Acta (1), Journal of Chemical Education (1)*

2011 *Proceedings of the National Academy of Sciences* (1)*, Inorganic Chemistry (2), Crystal Growth and Design (1), American Mineralogist (1), Dalton Transactions (1)*

2010 *Geochimica et Cosmochimica Acta (*1*)*

2. **Department**

Graduate Education Committee (2024-current)

Departmental Executive Committee (2014-2018, 2023-2024)

Chair of Diversity, Equity, and Inclusion Committee (2020-2021)

Faculty mentor to assistant professors (2020-present)

Tenure and Promotion Committee Recorder (2019-2020)

Chair of Radiochemistry Faculty Search Committee (2018-2020)

Graduate Recruiting Committee (2014-2018, Chair 2015-2018)

Departmental Salary Committee (2018)

Faculty Hiring Plan Committee (2014-2016)

Colloquium and Named Seminar Committee (2013-2014)

Member of Inorganic Chemistry (2013-2014), Chemical Informatics (2016-2017), Computational Radiochemistry (2023) Faculty Search Committee

Graduate Student Committee Member (25 current students)

Environmental Chemical Sciences Track Advisor, Environmental Sciences Program (2010-2020)

Contributor to instrumentation and educational grants (APEX II Detector (2013), powder X-ray diffractometer (2010), NNI-REU renewal (2013)), NSF-MRI (2015))

Member of X-ray facility committee (2011-2014)

Adjunct Faculty Review Committee – Dr. Dale Swenson (2013)

Lecturer Review Committee – Dr. Amy Strathman (2012, 2016), Dr. Rebecca Laird (2016)

Research and career pathway presentation to the ACS student chapter, Nov. 2011 and Nov. 2013

Volunteer for CLAS Open House, Aug 2014

3. **College and University**

CLAS Elected Representative Graduate Council (2020-2023)

CLAS Scholarship Committee (2019-2022)

CLAS Collegiate Steering Committee (2019-2021)

CLAS Diversity Committee (2018-2020)

CLAS Fixed Term Faculty Governance and Representation Committee (2018)

Member of the Physical Sciences and Engineering Center and Research Core Facility Launch Team (2018-2021)

UI Presidential Scholarship Selection Committee (2018)

Secretary of CLAS Faculty Assembly (2018-2019)

Elected Representative for CLAS Faculty Assembly (2017-2020)

Member of the CLAS 20/20 Committee (2017-2019)

Member of the Review Committee for the Department of Radiation Oncology, April 6-7, 2017

Member of the UI Basic Science Radiation Protection Committee (2017-present)

Member of the UI Honors Steering Committee (2016-2022)

Center for Health Effects of Environmental Contamination Executive Committee (2016-present)

Living Learning Communities Advisory Board Member (2016-2017)

Honors PrimeTime Instructor (August 2015, 2016, 2017)

Excel Lecturer for OnIowa (August 2015, 2016, 2017, 2019)

Participant in Digital Course Content Project through Center for Teaching (2015)

Obermann Graduate Institute Advisory Board (2014-2016)

Member of the Search Committee for the research staff scientist, Central Microscopy Facility (2014)

Co-organized “Development of Radiochemistry Program at the University of Iowa” Symposium with Dr. Michael Schultz, Department of Radiology, April 19, 2013.

Affiliate of IIHR-Hydroscience and Engineering (2013-current)

Member of the Center for Global and Regional Environmental Research (2010-current)

Member of the Environmental Health Sciences Research Center (2012-current)

Member of the Environmental Science Program Advisory Board (2010-2019)

Reviewer for the Women in Science and Engineering Travel Grant (2011)

4. **Community**

Iowa Private Wells Radium Study – supported by CHEEC (2019-2021)

Liquid nitrogen ice cream, 4th grade Extended Learning Program, Horn Elementary, May 1, 2018

Earth Day Outreach event “Fight the pollution: slime and oobleck”, Johnson County Historic Poor Farm, April 22, 2018

Garner Elementary School, North Liberty, “Solids and Liquids” presentation to 2nd grade with Prof. Ed Gillian (Chemistry), February 20, 2017

University of Iowa Natural History Museum Mobile Museum Display (representing Water Sustainability Initiative and partnered with CHEEC and DNR) (Spring-Fall 2015)

STEM Education initiative partnered with Mobile Museum display (with Dr. Leslie Flynn, Department of Education)

Presented at Linn-Mar High School (Cedar Rapids) STEM Event, November 12, 2013

Organized “Magic of Chemistry” Night at the University of Iowa Museum of Natural History, January 25, 2013.