

Brian A. Powell

Fjeld Professor of Nuclear Environmental Engineering and Science
Clemson University
Department of Environmental Engineering and Earth Sciences; Department of Chemistry
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(a) Education and Training

Clemson University	Environmental Engineering and Science	PhD, 2004
Clemson University	Environmental Engineering and Science	MS, 2001
University of Montevallo	Chemistry	BS, 1999

(b) Research and Professional Experience

2015-present **Fjeld Professor of Nuclear Environmental Engineering and Science**, Clemson University, Department of Environmental Engineering and Earth Sciences; Department of Chemistry; Oversees teaching and research programs related to environmental radiochemistry and advises graduate students and postdocs in radiochemistry and geochemistry research; 44 graduate students (10 current) and 14 postdocs advised (3 current). Dr. Powell's research focuses on understanding and prediction of the physical, chemical, and biological processes that govern the mobility of radionuclides in natural and engineered systems. Dr. Powell has conducted sponsored research in a wide range of projects dealing with topics of environmental radiochemistry, geochemical reaction modeling and thermodynamic database development, and evaluation of trace metal and contaminant transport in the subsurface.

2018-present **Joint Appointee**, Savannah River National Laboratory, Joint appointment to help promote collaborative research between Clemson University and Savannah River National Laboratory.

2018-present **Founder and Owner**, Rosewater Geochemical Modeling, LLC, consulting group focusing on a variety of waste disposal related problems

2013-2014 **Associate Professor**, Environmental Engineering and Earth Sciences, Clemson University

2008-2013 **Assistant Professor**, Environmental Engineering and Earth Sciences, Clemson University

2006-2008 **Postdoctoral Fellow**, Lawrence Livermore National Laboratory, Livermore, CA; Performed laboratory and field experiments examining the fate and transport of actinides at the Nevada Nuclear Security Site.

2004-2006 **Postdoctoral Fellow**, Lawrence Berkeley National Laboratory, Berkeley, CA; Performed studies of the speciation of actinides within Hanford waste tanks and examined methods for enhanced sludge dissolution.

(c) Publications (selected relevant publications out of >100, h-index = 33)

1. Wasserman, N., Merino, N., Coutelot, F., Kaplan, D. I., Powell, B. A., Kersting, A. B., Zavarin, M. "Biogeochemistry of a seasonally stratified and radiologically contaminated pond. Part I: Sources, seasonal cycling, and long-term migration of plutonium", 2023, Nature Scientific Reports. 10.1038/s41598-023-45182-4
2. Kaplan, D. I., Smith, R. J., Parker, C. J., Roberts, K. A., Hazenberg, P., Morales, J., O'Loughlin, E. J., Boyanov, M. I., Weisenhorn, P., Kemner, K. M., and Powell, B. A. "Natural Attenuation of Uranium in a Fluvial Wetland: Importance of Hydrology and Speciation" Applied Geochemistry. 155, 105718, 2023.
3. Fallon, C. M., Bower, W. R., Powell, B. A., Livens, F. R., Lyon, I. C., McNulty, A. E., Peruski, K., Mosselmans, J. F., Kaplan, D. I., Grolimund, D., Warnicke, P., Ferreira-

- Sanchez, D., Kauppi, M., S., Vettese, G., Shaw, S., Morris, K., Law, G., “Vadose-Zone Alteration of Metaschoepite and Ceramic UO₂ in Savannah River Site Field Lysimeters” *Science of the Total Environment*, 862(1), 160862, 2023.
4. Coutelot, F., Wheeler, J., Merino, N., Kaplan, D. I., Owings, S., Taillefert, M., Zavarin, M., Kersting, A. B., Powell, B. A., “Temporal evolution of Pu and Cs sediment contamination in a seasonally stratified pond” *Science of the Total Environment*, 857, 159320, 2022.
 5. Santikari, V., Witmer, M., Murdoch, L. C., Kaplan, D. I., Powell, B. A. “Leaching and transport of technetium from reducing cementitious waste forms in field lysimeters” *Science of the Total Environment*, 841, 156596, 2022.
 6. Fergusson, B. O., Murdoch, L. C., Trumm, M., Liu, F., Rao, A. M., Powell, B. A., “Mechanism and kinetics of citrate promoted dissolution of uranyl phosphate” *Geochimica et Cosmochimica Acta*, 318, 247-262, 2022.
 7. Parker, C. J., Kaplan, D. I., Seaman, J. C., Powell, B. A., “Uranium partitioning from contaminated wetland soil to aqueous and suspended iron-floc phases: Implications of dynamic hydrologic conditions on contaminant release” *Geochimica et Cosmochimica Acta*, 318, 292-304,
 8. Collins, M., K., Anctil, A., Kennedy, M. S., Powell, B. A., “Metal leaching from lithium-ion and nickel-metal hydride batteries and photovoltaic modules in simulated landfill leachates and municipal solid waste materials” *Chemical Engineering Journal*, 431, 133825-133835, 2022.
 9. Estes, S. L., Powell, B. A., “Enthalpy of uranium adsorption onto hematite” *Environmental Science and Technology*, 54(23), 15004-15012, 2020.
 10. Edayilam, N., Montgomery, D., Mamun, A., Ferguson, B., Martinez, N., Powell, B. A., Tharayil, N., “Dissolution and vertical transport of uranium from stable mineral forms by plants as influenced by the co-occurrence of uranium with phosphorous” *Environmental Science and Technology*, 54(11), 6602-6609, 2020.

(d) Relevant Experience

1. Advisory Board: Environmental Protection Agency (EPA) Science Advisory Board (SAB), Radiation Safety Committee (member 2012-2018). Committee advises the EPA and EPA SAB on issues related to radiation exposure and nuclear waste disposal.
 - o Note: Activities included reviewing “Considerations Related to Post-Closure Monitoring of Uranium In-Situ Leaching/In-Situ Recovery (ISL/ISR) Sites” both as a member of the advisory board and a follow-on review effort directly consulting with the EPA.
2. Professional Service: Member of National Council on Radiation Protection and Measurements (NCRP), Program Area Committee 5 (2014-Present): Environmental Radiation and Radioactive Waste. The NCRP is a congressionally mandated organization to provide guidance on issues related to radiation protection and dose assessment. The PAC 5 is solely focused on environmental radiation and radioactive waste management.
3. Awards: 2020 and 2021 Clemson University, College of Engineering, Computing, and Applied Science Researcher of the Year; 2018 Fred C. Davison Distinguished Scientist (Citizens for Nuclear Technology Awareness); 2013-2018 DOE Early Career Research Program award; 2014 Governor’s Young Researcher Award for Excellence in Scientific Research; 2011 Clemson Sigma Xi Young Investigator of the Year
4. Mentor/Advisor, Promotion of Diversity and Inclusivity: Summer research program. Mentor/advisor for South Carolina State University (SCSU, HBCU) undergraduate summer research students to perform research on nuclear waste disposal. The program couples the interest in nuclear waste remediation/disposal from both Clemson and SCSU. 2008, 2013, 2014, 2016