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Civil and Environmental Engineering
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Research Interests:

- Mathematical modeling of flow and contaminant fate and transport in the subsurface
- Multicomponent reactive transport modeling of chemical species involving biotic and abiotic reactions in aqueous environments
- Modeling microbial metabolism in anaerobic environments considering thermodynamic factors and maintenance energy requirements
- Removal of organic and emerging contaminants in water

Courses:

- CEE 5418/7418 Engineering Microbiology
- CEE 5334/7334 Fate and Transport of Contaminants
- CEE 5313/7313 Environmental Chemistry and Biology
- CEE 5332/7332 “Groundwater Hydrology and Contaminants
- CEE 2304 “Introduction To Environmental Engineering and Science

Publications (as of January 2016):

Peer Reviewed Publications:

- Şengör SS, Mayer KU, Greskowiak J, Wanner C, Su D., and Prommer H. 2015. A reactive transport benchmark on modeling biogenic uraninite re-oxidation by Fe (III)-(hydr) oxides. *Comput Geosci*,19(3): 569-583
- Yabusaki SB, Şengör SS, and Fang Y. 2015. A uranium bioremediation reactive transport benchmark. *Comput Geosci*,19(3): 551-567

- Tayyebi A, Tayebi M, Shafikhani A, and **Şengör SS**. 2015. ZnO quantum dots-graphene composites: Formation mechanism and enhanced photocatalytic activity for degradation of methyl orange dye. *Journal of Alloys and Compounds* 663: 738-749.
- Arora B., **Şengör SS**, Steefel C., Spycher N. 2014. "A Benchmarking Study On Heavy Metal Cycling In Lake Sediments" *Comput Geosci Journal*, 1-21.
- Singh G, **Şengör SS**, De J, Stewart B, Squillace E, Spycher N, Ginn T, Peyton B, and Sani RK. 2014. "Reoxidation of Biogenic Reduced Uranium – A Challenge Towards Bioremediation", *Crit. Rev. Environ. Sci. Technol.* 44(4): 391-415
- Alt-Epping P., Tournassat C., Rasouli P., Steefel C.I. , Mayer K.U., Jenni A., Mäder U., **Şengör S.S.**, Fernandez R. 2014. Benchmark reactive transport simulations of a column experiment in compacted bentonite with multi-species diffusion and explicit treatment of electrostatic effects. *Comput Geosci Journal* 1-16.
- **Şengör S.S.**, and P. Gikas. 2014. "The Influence of Single and Combined Effects of Zn, Cu and Temperature on Microbial Growth." *Global Nest Journal* 16.4 (2014): 699-706.
- **Şengör SS**, Ünlü K. 2013. "Modeling contaminant transport and remediation at an acrylonitrile spill site in Turkey", *Journal of Contaminant Hydrology*, Vol. 150, pp 77-92.
- **Şengör S.S.**, Ginn T.R., Brugato C., Gikas P. 2013. "Anaerobic Microbial Growth Near Thermodynamic Equilibrium as a Function of ATP/ADP Cycle: The effect of Maintenance Energy Requirements", *Biochemical Engineering Journal* 81: 65–72.
- **Şengör SS**, Greskowiak, J., Prommer, H. 2012. "Modeling Reactive Transport of Biogenic Uraninite and its Re-oxidation by Fe(III)-(hydr)oxides", *Mineralogical Magazine*, 76(6), 2353. goldschmidtabstracts.info/2012/2353.pdf
- **Şengör SS**, Gikas P, Moberly JG, Peyton B, Ginn TR. 2012. "Comparison of single and joint effects of Zn and Cu in continuous flow and batch reactors", *Journal of Chemical Technology and Biotechnology*, 87: 374-380.
- Spycher NF, Issarangkun M, Stewart B, **Şengör SS**, Belding E, Ginn, TM, Peyton BM, and Sani RK. 2011. "On Modeling Biogenic Uraninite Precipitation and Reoxidation by Iron(III)(hydr)oxides: Thermodynamic and Kinetic Considerations" , *Geochim. Cosmochim. Acta*. 75: 4426-4440.
- **Şengör S.S.**, Barua, S., Gikas, P., Ginn T.R., Peyton B., Sani R., Spycher N., 2009. "The influence of heavy metals on microbial growth kinetics including lag time: Mathematical Modeling and Experimental Verification", *Environmental Toxicology and Chemistry*, Vol. 28(10), 2020-2029.
- Moberly J.G., Sani R.K, Borch T., Spycher N., **Şengör S.S.**, Ginn T.R., Peyton B., 2009. "Heavy Metal-Mineral Associations in Coeur d'Alene River Sediments: A Synchrotron-Based Analysis", *Water Air Soil Pollution*, Vol. 201, pp. 195-208.
- Gikas, P., **Şengör S.S.**, Ginn T.R., Moberly J., Peyton, B., 2009. "The effects of heavy metals and temperature on microbial growth and lag", *Global Nest Journal*, Vol. 11(3), pp. 325-332.
- **Şengör S.S.**, Spycher N., Ginn T.R., Sani R., Peyton B., 2007. "Biogeochemical reactive-diffusive transport of heavy metals in Lake Coeur d'Alene sediments". *Applied Geochemistry*, Vol. 22, pp. 2569-2594.
- **Şengör S.S.**, Spycher N., Ginn T.R., Moberly J.G., Peyton B., Sani R.K, 2007. "Reductive dissolution and metal transport in Lake Coeur d'Alene sediments". In *Water-Rock Interaction, WRI-12* (Bullen T. and Wang Y., eds.), vol. 2. Taylor & Francis Group, London, pp. 895-899

Technical Reports:

- Ginn, T.R., Massoudieh, A., Diaz, M. E., **Sengor, S.S**, 2005. “Mathematical Modeling of Fate and Transport of Aqueous Species in Stormflow Entering Infiltration Basin”, Sacramento, California.

Invited Seminars and Presentations:

- **Şengör S.S**, G. Singh, A. Dohnalkova, N. Spycher, T.R Ginn, B.Peyton, R.K Sani, American Chemical Society (ACS) National Meeting, “Aggregation of Biogenic U(IV) Nanoparticles: Impact of Different Environmental Conditions”, Dallas, TX, March 16-20, 2014.
- H. Prommer, O.Atteia, S.S. Sengor, B.Rathi, J. Davis, 2014. “Arsenic Mobilisation under non-isothermal conditions”, Subsurface Environmental Simulation Benchmarking Workshop IV, October 6-8, 2014, Château de Cadarache, France , **(Invited)**.
- B. Arora, K.U. Mayer, C.I. Steefel, N.F. Spycher, **S.S. Sengor**, D. Jacques, and P. Alt-Epping, 2014. “Reactive Transport Benchmarks on Heavy Metal Cycling”, Goldschmidt International Conference, Sacramento, CA, June 8-13, 2014.
- **Şengör S.S.**, Wu M., Prommer H. 2013. “Assessment of the grid-dependent accuracy of mixing-controlled reactive transport”, Subsurface Environmental Simulation Benchmarking Workshop III, November 11-13, 2013 Leipzig, Germany, organized by Helmholtz Centre for Environmental Research – UFZ **(Invited)**.
- Arora B., **Şengör S.S.**, Steefel C., and Spycher N. 2013. “A benchmarking Study On Heavy Metal Cycling In Lake Sediments”, Subsurface Environmental Simulation Benchmarking Workshop III, November 11-13, 2013 Leipzig, Germany, organized by Helmholtz Centre for Environmental Research – UFZ **(Invited)**.
- Yabusaki S., **Şengör S.S.**, Fang Y., and Waichler S. 2013. “In Situ Bioremediation of Uranium Contaminated Groundwater”, Subsurface Environmental Simulation Benchmarking Workshop III, November 11-13, 2013 Leipzig, Germany, organized by Helmholtz Centre for Environmental Research – UFZ **(Invited)**.
- **Şengör, S.S.**, 2013. “Modeling Subsurface Microbial Community Dynamics in Ecosystems Impacted by Metal Toxicity”, South Dakota School of Mine & Technology, October 15, 2013. **(Invited)**
- **Şengör SS**, Greskowiak J., Prommer H., Spycher N. 2012. “Simulating bioprecipitation and re-oxidation of uraninite” invited presentation at the Subsurface Environmental Simulation Benchmarking Workshop II, October 29 -November 1, 2012 Kwoh-Ting Library, National Central University, Taiwan **(Invited)**.
- **S. Sevinc Sengor**, Janek Greskowiak, Henning Prommer, Nicolas Spycher, 2011. “Biogenic uraninite re-oxidation applications in PHT3D”, Lawrence Berkeley National Laboratory Subsurface Environmental Simulation Benchmarking Workshop, Berkeley, CA, November 15-18, 2011 **(Invited)**.
- Rajesh Sani, Rajneesh Jaswal, Sudhir Kumar, **S. Sevinç Şengör**, Ravi Kukkadapu, Alice Dohnalkova, Brent M. Peyton, Nicolas Spycher, and Timothy R Ginn. 2012. “Fate, transport, and stability of biogenic uraninite: its interactions with microbes and soil minerals”, International Workshop: 'Uranium biogeochemistry: transformations and applications', Ascona, Switzerland, March 11-16, 2012. **(Invited)**.
- **Şengör, S.S.**, 2007. “Biogeochemical Cycling of Heavy Metals in Benthic Sediments of Lake Coeur d'Alene”, U.S. Geological Survey, Menlo Park, CA, September 20, 2007. **(Invited)**

Peer Reviewed Conference Proceedings:

- Arora B., Mayer K.U., Steefel C.I., Spycher N, **Şengör S.S.**, Jacquez D., Alt-Epping P., 2014. "Reactive Transport Benchmarks on Heavy Metal Cycling" *Goldschmidt* 69.
- Spycher NF, Issarangkun M, Stewart B, **Şengör SS**, Ginn TR, **Sani RK**, Peyton BM. 2010. Modeling UO₂ bioprecipitation and reoxidation by Fe(III) (hydr)oxid. *Geochim. Cosmochim. Acta*. Vol. 74(12): A984-A984.
- **Şengör SS**, Brugato CJ, Gikas P, Fletcher M, Ginn TR, 2009. "A comparison of approaches to model thermodynamics and maintenance energy requirements of microbial metabolism", *Geochimica Cosmochimica Acta* Vol. 73(13): A1196.

Other Selected Conference and Symposia Presentations:

- Arora B., **Şengör SS**, Steefel C., Spycher N. 2013. "A Benchmarking Study On Heavy Metal Cycling In Lake Sediments", oral presentation at 2013 GSA (Geological Society of America) Denver Annual Meeting, 27-30 October 2013, Denver, Colorado, Paper #310-10.
- **S. Sevinc Sengor**, Nicolas Spycher, Brent Peyton, Rajesh Sani and Timothy Ginn. 2012. "Reactive transport modeling of biogenic uraninite and it's re-oxidation by Fe(III)-(hydr)oxides", International Workshop: 'Uranium biogeochemistry: transformations and applications', Ascona, Switzerland, March 11-16, 2012.
- **S. Sevinc Sengor**, Petros Gikas, James Moberly, Brent Peyton, and Timothy Ginn. 2011. "The influence of single and combined effects of Zn, Cu and temperature on microbial growth" presented at the 5th European Bioremediation Conference, Chania, Greece, July 4-7 2011.
- **Sengor, S. S.**, Brugato, C. J., Gikas, P., Fletcher, M., Ginn, T. R., 2009. "A Comparison of Approaches to Model Thermodynamics and Maintenance Energy Requirements of Microbial Metabolism", *Goldschmidt 2009 Conference*, June 21 - 26, 2009, Davos, Switzerland, *Geochimica et Cosmochimica Acta Suppl.* 73(13), Abstract A1196.
- **Sengor S. S.**, Gikas P., Ginn T. R., Spycher N., Barua S., 2008, "Modeling Biogeochemical Reactive Transport and Metal Toxicity in Lake Sediment", 4th European Bioremediation Conference, Chania, Greece, 2008.
- Gikas P., **Sengor S. S.**, Ginn T. R., Moberly J. Peyton B., 2008, "Mathematical Modeling of Microbial Growth and Lag, in Environments Contaminated with Heavy Metals", 9th International Conference: Protection and Restoration of the Environment, Kefallonia, Greece, 2008.
- Spycher, N., **Sengor, S.S**, Ginn, T., Peyton, B., Sani, R., Moberly, J., Modeling iron (hydr)oxide reductive dissolution and metal transport in mining-impacted riverine and lacustrine sediments. *Comp. Methods Water Res.*, CMWR XVII, July 6-10, San Francisco, California, 2008.
- **Sengor S.S.**, Spycher N., Ginn T.R., Gikas P., Sutapa B., Peyton B., Sani R.K. Modeling redox disequilibrium and biogeochemical behavior of metals in lake sediments, Oral presentation at 2007 GSA (Geological Society of America) Denver Annual Meeting, 28-31 October 2007, Denver, Colorado, Paper #126-5.
- **Sengor S.S.**, Spycher N., Ginn T.R., Moberly J.G., Peyton B., Sani R.K, 2007. Reductive dissolution and metal transport in Lake Coeur d'Alene sediments, Oral presentation at 12th International Symposium on Water-Rock Interaction, July 31-August 5, 2007, China, Kunming.
- **Sengor, S.S.**, Spycher N., Ginn T. R., Sani R., Peyton B. Reactive diffusive transport of heavy metals in Lake Coeur d'Alene sediments, Oral presentation at 2006 AGU Fall Meeting, 11-15 December 2006, San Francisco, California, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract B22C-03.

- Ginn T. R., **Sengor, S.S.**, Barua S., Moberly, J., Peyton B. Metal toxicity effects on microbial growth and degradation: An application of dose-structured population dynamics modeling, Poster presentation at Slovenia and U.S. Workshop on Environmental Science and Engineering, September 27-30, 2006, Ljubljana, Slovenia.
- **Sengor, S.S.**, Spycher N., Ginn T. R., Sani R., Peyton B. Modeling biogeochemical dynamics of heavy metal transport in benthic sediments of Lake Coeur d'Alene, Poster presentation at Slovenia and U.S. Workshop on Environmental Science and Engineering, September 27-30, 2006, Ljubljana, Slovenia.
- **Sengor, S.S.**, Spycher N., Ginn T. R., Sani R., Peyton B. Modeling biogeochemical reactive diffusive transport of heavy metals in Lake Coeur d'Alene sediments: Biotic/abiotic coupling and toxicity of metals to microbial activity, Oral presentation at Slovenia and U.S. Workshop on Environmental Science and Engineering, September 27-30, 2006, Ljubljana, Slovenia.
- **Sengor, S.S.**, Spycher N., Ginn T. R., Sani R., Peyton B. Modeling biogeochemical dynamics of heavy metal transport in benthic sediments of Lake Coeur d'Alene, Poster presentation at 232nd American Chemical Society National Meeting and Exposition, Division of Geochemistry, Sci-Mix Session, September 10-14, 2006, San Francisco, California
- **Sengor, S.S.**, Spycher N., Ginn T. R., Sani R., Peyton B. Modeling biogeochemical dynamics of heavy metal transport in benthic sediments of Lake Coeur d'Alene, Oral presentation at 232nd American Chemical Society National Meeting and Exposition, Division of Geochemistry, September 10-14, 2006, San Francisco, California
- **Sengor, S.S.**, Spycher N., Belding E., Curthoys K., Ginn T. R., Sani R., Peyton B. Modeling biogeochemical reactive transport of heavy metals in Lake Coeur d'Alene Sediments, Poster presentation at the UC Toxic Substances Research and Teaching Program 19th annual research symposium, 28-29 April 2006, San Diego, California.
- **Sengor, S.S.**, N. Spycher, E. Belding, K. Curthoys, T. R. Ginn. Modeling Biogeochemical Cycling of Heavy Metals in Lake Coeur d'Alene Sediments, Oral presentation at 2005 AGU Fall Meeting, 5-9 December 2005, San Francisco, California, Eos Trans. AGU, 86(52), Fall Meet. Suppl., Abstract B22A-02.
- **Sengor S.S.**, Ginn T.R., Sani S., Peyton B., Spycher N., Modeling Subsurface Biogeochemical Cycling of Heavy Metals, Poster presentation at the UC Toxic Substances Research and Teaching Program 18th annual research symposium, 22-23 April 2005, Sacramento, California.
- Peyton B., Sani R., Ginn T.R., Moberly J., Barua S., **Sengor S.S.**, Belding E. Spycher N., Borch T., Cummings D., Balistrieri L., Biogeochemical cycling of heavy metals in Lake Coeur d'Alene sediments: The role of indigenous microbial communities, Poster presentation, NSF PI Meeting Biocomplexity Program, Washington D.C., 21-24 April 2005.
- **Sengor S.S.**, Ginn T.R., Sani R., Peyton B., Spycher N., Modeling Subsurface Biogeochemical Cycling of Heavy Metals, Poster presentation at the 2004 AGU Fall Meeting, 13-17 December 2004, San Francisco, California, Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract H21A-0999.

Students and Postdoctoral Fellows:

- Mahdi Heidarizad (Ph.D student)
- Jianing Lee (Ph.D student)
- Faris Altamimi (Ph.D student)
- Roshni Kalyanasundaram (MS Student)

Professional Memberships:

- American Geophysical Union (AGU)
- American Chemical Society (ACS)
- Geological Society of America (GSA)
- The American Association for the Advancement of Science (AAAS)

Graduate and Postdoctoral Advisors:

- Prof. Timothy R. Ginn, University of California-Davis, Doctoral and Post-Doctoral advisor