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Professional Preparation

Post Doc	2016-18	Center for Biofilm Engineering, Montana State University
Ph.D.	2015	IHE-Delft Inst. for Water Education, The Netherlands, Env. Technologies Erasmus Mundus Research Scholarship
M.Sc.	2010	Purdue University, Ecol. Sc. & Eng. Fulbright Research Scholarship
B.Eng.	2006	Autonomous Metropolitan University, Mexico, Env. Eng.

Professional Experience

2018-Present	Assistant Research Professor (non-tenure track), Dept. of Chemical and Biological Engineering, Center for Biofilm Engineering, MSU, USA
2020-Present	Instructor, Dept. of Civil and Environmental Engineering, MSU, USA
2006-2007	Environmental consultant, analyst and laboratory assistant, Water quality and residues laboratory, Autonomous Metropolitan University, Mex
2005-2006	Research and teaching assistant, Autonomous Metropolitan University, Mex

Publications

- E.J. Espinosa-Ortiz, E.R. Rene, R. Gerlach (2021). Potential use of fungal-bacterial co-cultures for the removal of organic pollutants. *Critical Reviews in Biotechnology* (Accepted).
- E.J. Espinosa-Ortiz, R. Gerlach (2021). Biofilms (Chapter 2). In: Nofke, N. (Ed.), *Treatise on Invertebrate Paleontology, Part B, Prokaryota. Volume 2, n.147, Part B*. The University of Kansas Paleontological Institute, Lawrence, Kansas. pp 144-148.
- A. De Grazia, G. LuTheryn, A. Meghdadi, A. Mosayyebi, E.J. Espinosa-Ortiz, R. Gerlach, D. Carugo (2020). A microfluidic-based investigation of bacterial attachment in ureteral stents. *Micromachines*. 11(4):408.
- A.C. Mitchell, E.J. Espinosa-Ortiz, S.L. Parks, A. Phillips, E. Lauchnor, A.B. Cunningham, R. Gerlach (2019) Kinetics of calcite precipitation by ureolytic bacteria under aerobic and anaerobic conditions. *Biogeosciences*, 16:2147-2161.
- E.J. Espinosa-Ortiz, R. Gerlach (2019) Struvite stone formation by ureolytic biofilm infections (Chapter 6). In: *The Role of Bacteria in Urology*, 2nd edition, D. Lange, B. Chew (Eds): Springer. pp 61-70.
- E.J. Espinosa-Ortiz, B.H. Eisner, D. Lange, R. Gerlach (2018) Current insights into mechanisms and management of infection stones. *Nat Rev Urol*, 16(1):35-53.
- L.C. Tan, E.J. Espinosa-Ortiz, V.N. Yarlagadda, E.D. van Hullebusch, R. Gerlach, P.N.L. Lens. (2018) Selenate removal in biofilm systems: effect of nitrate and sulfate on selenium removal efficiency, biofilm structure and microbial community. *J Chem Technol Biotechnol*, 93(8):2380-2389.
- E.J. Espinosa-Ortiz, E.R. Rene, F. Guyot, E.D. van Hullebusch, P.N.L. Lens (2017) Biomineralization of tellurium and selenium-tellurium nanoparticles by the white-rot fungus *Phanerochaete chrysosporium*. *Int Biodeterior Biodegradation*, 124:258-266.
- E.J. Espinosa-Ortiz, M. Shakya, R. Jain, E.R. Rene, E.D. van Hullebusch, P.N.L. Lens (2016) Sorption of zinc onto elemental selenium nanoparticles immobilized in *Phanerochaete chrysosporium* pellets. *Environ Sci Pollut Res*, 23(21):21619-21630.

- E.J. Espinosa-Ortiz, Y. Pechaud, E. Lauchnor, E.R. Rene, R. Gerlach, B.M. Peyton, E.D. van Hullebusch, P.N.L. Lens (2016) Effect of selenite on the morphology and respiratory activity of *Phanerochaete chrysosporium* biofilms. *Bioresour Technol*, 210:138-145.
- E.J. Espinosa-Ortiz, E.R. Rene, K. Pakshirajan, E.D. van Hullebusch, P.N.L. Lens (2016) Fungal pelleted reactors in wastewater treatment: applications and perspectives. *Chem Eng J*, 283:553-571.
- E.J. Espinosa-Ortiz, E.R. Rene, E.D. van Hullebusch, P.N.L. Lens (2015) Removal of selenite from wastewater in a *Phanerochaete chrysosporium* pellet based fungal bioreactor. *Int Biodeterior Biodegradation*, 102:361-369.
- E.J. Espinosa-Ortiz, G. Gonzalez-Gil, P.E. Saikaly, E.D. van Hullebusch, P.N.L. Lens. (2015) Effects of selenium oxyanions on the white-rot fungus *Phanerochaete chrysosporium*. *Appl Microbiol Biotechnol*, 99(5):2405-18.
- E.J. Espinosa-Ortiz, M. Vaca-Mier. (2013) Nanotechnology for water and wastewater treatment: potentials and limitations. In: P.N.L. Lens, J. Virkutyte, V. Jegatheesan, S.H. Kim, S. Al-Abed (Eds.), *Nanotechnology for Water and Wastewater Treatment*. IWA Publishing. pp. 83-127.

Under review

Garth A. James, Paul J. Renick, Laura Boegli, Erika J. Espinosa-Ortiz, Ellen Lauchnor, Daniel J. Fitzgerald, Emma Woodmansey, Eric D. Roche, and Philip S. Stewart. Effects of a cadexomer iodine wound gel on viability, oxygen penetration and pH in mature in vitro *Pseudomonas aeruginosa* and *Staphylococcus aureus* biofilms. *Wound Repair and Regeneration* (Under review).

Awards, Honors and Recognitions

- Excellence in Research Award. Norm Asbjornson College of Engineering, Montana State University. MT, USA, May 3, 2021.
- AUA StoneLab Travel Award. American Urology Association. StoneLab Scientific Symposium: "Thinking outside the box for kidney stone disease". Baltimore, USA, Dec 5-8, 2019.
- Selected to participate in the 2019 Future Faculty Career Exploration Program. Rochester Institute of Technology. Rochester, NY, USA. Sept 25-28, 2019.
- Outstanding Researcher Award. Center for Biofilm Engineering. Montana State University. MT, USA, 2019.
- First place in Flash Presentation competition. 4rd International Conference on Research Frontiers in Chalcogen Cycle Science and Technology, Delft, The Netherlands, 27th-28th May 2015.
- First place in the Poster competition. 3rd International Conference on Research Frontiers in Chalcogen Cycle Science and Technology, Delft, The Netherlands, 27th-28th May 2013.
- Award for Student Excellence. National Association of Engineering Faculties and Schools. Mexico, 2007.
- Academic Excellence Award, Autonomous Metropolitan University, Mexico, 2002-2005.
- Mexican representative at the Stockholm Junior Water Prize, International Water Week, Sweden, 2001.
- National Junior Water Prize, Alternate drainage for the treatment and reuse of water, Mexico, 2001.

Conferences

- *Fungal biofilms: the good, the bad and the unknown*. Montana Biofilm Meeting, USA, 2021.
- *Strategies to be more employable: case studies from the personal and academic perspective*. Women in Mining, Peru, July 07, 2021.
- *Fungal biofilms: insights, perspectives and potential applications in wastewater treatment*. Department of Civil & Environmental Engineering & Earth Science, University of Notre Dame, USA, Sep 29, 2020.
- *Multi-domain biofilm systems and their applications*. Montana Biofilm Meeting, USA, 2020.
- *Evaluating the effect of urine chemistry on the formation of infection stones*. Poster presentation. StoneLab Scientific Symposium: "Thinking outside the box for kidney stone disease". Baltimore, USA, Dec 5-8, 2019.
- *Investigating the development of multi-kingdom biofilms involved in the microbial defacement of building materials*. Poster presentation. Montana Biofilm Meeting, USA, 2019.
- *Microbial defacement of building materials*. Oral presentation. Montana Biofilm Meeting, USA, 2018.
- *Evaluating the role of urine chemistry on the formation of infection stones*. Poster presentation. World Congress of Endourology, Canada, 2017.
- *Understanding the development of mixed fungal-bacterial biofilms*. Oral presentation. Montana Biofilm Meeting, USA, 2017.
- *Effect of selenite on the morphology and respiratory activity of *Phanerochaete chrysosporium* biofilms*. Oral presentation. Montana Biofilm Meeting, USA, 2016.
- *Effect of selenite on fungal biofilms*. Oral presentation. 4rd International Conference on Research Frontiers in Chalcogen Cycle Science and Technology, The Netherlands, 2015.
- *Exploiting the operational advantages of *Phanerochaete chrysosporium* inoculated suspended growth bioreactor for the removal of selenite from wastewater*. Oral presentation. 2nd International Conference on Recycling and Reuse, Turkey, 2014.
- *Comparative study of three processes of biological degradation of hydrocarbons in contaminated soil*. Oral presentation. XXI Week of teaching and research in chemistry. Autonomous Metropolitan University, Mexico, 2008.
- *Application of biotechnology to contaminated soils by diesel*. Oral presentation. 8th Environmental Engineering Forum and the 7th Environmental Week. Autonomous Metropolitan University, Mexico, 2007.
- *Application of compost to contaminated soils by diesel for their remediation*. Oral presentation. XV National Congress: Environmental Solutions for a Plenty Development. Mexico 2025. Mexican Federation of Sanitary Engineering and Environmental Sciences, Mexico, 2006.

Research support

- "Optimizing the bioconversion and recycling of inedible plant waste using mixed microbial cultures for long-term human habitation in space". NASA Rapid Response Research (R3). \$99,864. *Principal Investigator*. Collaborators: Robin Gerlach (ChBE, MSU), Huyen Bui (CBE, MSU).
- "RII Track-4: Engineering mixed microbial communities & bioreactor systems for effective wastewater treatment & recovery of value-added products". NSF EPSCoR Research Fellows (RII Track 4). *Principal Investigator*. Invited to submit a full proposal.
- "Integrated Biofilm Control Strategies for Water Systems during Extended Space Flight". NASA EPSCoR. *Co-Principal Investigator*. Invited to submit a full proposal. Collaborators: Phil Stewart (CBE, MSU), Matthew Fields (CBE, MSU), Christine Foreman (ChBE, MSU), Brent Peyton (ChBE, MSU), Paul Sturman (CBE, MSU), Darla Goeres (CBE, MSU), Stephan Warnat (ME, MSU), Albert Parker (CBE, MSU), Heidi Smith (CBE, MSU).

- “Understanding, predicting and engineering cross-domain interactions in fungal-bacterial biofilms to improve the bioconversion of lignocellulosic waste materials to fuels and value-added products”. DOE EMSL-FICUS. Instrument-time grant. *Principal Investigator*. Invited to submit a full proposal. Collaborators: Robin Gerlach (ChBE, MSU), Huyen Bui (CBE, MSU).
- “FMSG: Biologically assembled and Recycled Construction and Structural materials (BRICS).” NSF. \$499,501. 01/21 – 12/22. *Co-Principal Investigator*. Collaborators: Chelsea Heveran (ME, MSU), Adrienne Philips (CE, MSU), Robin Gerlach (ChBE, MSU).
- “Exploring the use of fungi for the controlled construction, repair, and recycling of sustainable building materials”. Montana State University-Research Expansion Funding (MSU REF) & Norm Asbjornson College of Engineering. \$50,000. 08/20 – 07/21. *Co-Principal Investigator*. Collaborators:
- “Effect of nitrate and sulfate on the biotransformation of selenium, microbial diversity and multi-domain biofilm formation: implications for the remediation of selenium-laden waters”. NSF EPSCoR RII Track-1 CREWS project. \$49,856. 01/20 – 09/21. *Principal Investigator*. Collaborators: Robin Gerlach, Brent Peyton (ChBE, MSU), Ellen Lauchnor (CE, MSU), Rebecca Mueller (CBE, MSU).
- “Mineral recovery from urine- an alternative approach for providing nutrients for primary production in a controlled ecological life support system for long-term space missions”. Montana NASA EPSCoR Research Infrastructure Development (RID) RY. \$40,435. 01/18 – 09/18. *Co-Principal Investigator*. Collaborators: Robin Gerlach (ChBE, MSU).
- “Linking engineering and urology towards a better understanding and improved treatment of urinary stones”. Burroughs Wellcome Fund – Collaborative Research Travel Grant (ID# 1017519). \$10,667. 07/17 – 07/18. *Co-Principal Investigator*. Collaborators: Robin Gerlach (ChBE, MSU), Dirk Lange (The Stone Centre at VGH).
- Erasmus Mundus Grant. Erasmus Mundus Joint Doctorate Program. 2012-2015. Environmental Technologies for Contaminated Solids, Soils and Sediments (ETECoS3). Education, Audiovisual and Culture Executive Agency. European Commission. €108,300 (€7,500 for travel and installation expenses, €2,800 per month for living expenses).
- Vanguardia Latina Forum. 2009. Travel Grant. Inter-American Development Bank, Televisa of Mexico, The Getty Museum and the Los Angeles Mayor’s Office.
- Fulbright Grant. Fulbright Foreign Student Program. 2008-2010. Grant for M.Sc. study in Ecological Sciences and Engineering at the Purdue University – Graduate School. \$15,000 per year for living expenses, \$21,510 per year for tuition fees.

Synergistic Activities

- Co-leader of the group “Gathering All Together Honoring Every Race”, a network for faculty and staff from underrepresented racial and ethnic groups at MSU, Dec 2020-Present.
- Panel reviewer. U.S.-Mexico Commission for Educational and Cultural Exchange (COMEXUS). Assisted as a scientific expert in the selection committee for Mexican research visiting scholars to the Fulbright program, 2018-2019.
- Member of the editorial board, *Annals of Microbiology*, 2017- 2019.
- Current research advisor to one undergraduate student in Chemical Engineering at MSU, and co-advisor to one MSc. And one Ph.D. students in Civil and Environmental Engineering.
- Montana NASA EPSCoR Panel reviewer, Research initiation proposals, 2018 & 2019.
- Reviewer, *AMB Express*, *Algal Research*, *RSC Advances*, *Journal of Hazardous Materials*, *Environmental Science and Pollution Research*, *The Science of the Total Environment*, *Applied Microbiology and Biotechnology*, *Journal of Environmental Engineering*, *International Journal of Environmental Research and Public Health*.

Outreach Activities

- Podcast 'MSU Researchers Exploring Cement Alternative Using Fungi, Bacteria'. Yellowstone Public Radio. KEMC by Rachel Cramer. 02/2021. <https://www.ypradio.org/environment-science/2021-02-24/msu-researchers-exploring-cement-alternative-using-fungi-bacteria>
- Designed research water activities for Grades 4-12. CREWS Junior Researcher Acid Mine Drainage. Bozeman, MT, USA. Summer 2020.
- Participated at the 'Science meets Art' exhibition. 500 Women in Science, Bozeman, MT, USA. 12/2019.

Research areas

- Fungal-based technologies for water, wastewater and soil remediation.
- Biodeterioration of building materials due to multi-domain biofilm formation.
- Biomineralization processes applied to the medical field (e.g., formation of kidney stones induced by urinary tract infections).

Social media profiles and scores

- Current h-index (per Google scholar) is 9
- Link to Google scholar profile: <https://scholar.google.com/citations?user=Ytbqwb4AAAAJ&hl=en>
- Link to LinkedIn profile: <https://www.linkedin.com/in/erika-j-espinosa-ortiz-33494861/>
- Link to ResearchGate profile: <https://www.researchgate.net/profile/Erika-J-Espinosa-Ortiz>
- Link to CBE's webpage: <http://www.biofilm.montana.edu/people/faculty/espinosa-ortiz-erika.html>