

Catherine M. Kirkland

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(a) Professional Preparation

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| Rhodes College, Memphis, TN, Anthropology/Sociology | BA, 1997 |
| Montana State University, Bozeman, MT, Civil Engineering | BS 2008 |
| Montana State University, Bozeman, MT, Environmental Engineering | PhD 2017 |

(b) Appointments

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| 2017- present | Assistant Research Professor, Civil Engineering, MSU |
| 2017 | Research Experience in Carbon Sequestration (RECS) Fellow, US Department of Energy, National Energy Technology Laboratory, Southern Company, and NSF via the Research Coordination Network-CCUS under the Science, Engineering, and Education for Sustainability (SEES) program. |
| 2016 | NSF GROW Fellow, Delft University of Technology and Wageningen University and Research, the Netherlands |
| 2013 – 2017 | NSF GRFP Fellow, Research Assistant, MSU College of Engineering (COE) Magnetic Resonance Lab |
| 2013 | Mildred Livingston Grant Memorial Presidential Graduate Scholar, MSU |
| 2008 – 2012 | Staff Engineer, Genesis Engineering, Inc., Bozeman, MT |

(c) Publications

Kirkland, C. M.; Herrling, M. P.; Hiebert, R.; Bender, A. T.; Grunewald, E.; Walsh, D. O.; Codd, S. L., In Situ Detection of Subsurface Biofilm Using Low-Field NMR: A Field Study. *Environ. Sci. Technol.* **2015**, *49* (18), 11045-11052.

Kirkland, C. M.; Zanetti, S.; Grunewald, E.; Walsh, D. O.; Codd, S. L.; Phillips, A. J., Detecting Microbially Induced Calcite Precipitation in a Model Well-Bore Using Downhole Low-Field NMR. *Environ. Sci. Technol.* **2017**, *51* (3), 1537-1543.

Kirkland, C. M.; Hiebert, R.; Phillips, A.; Grunewald, E.; Walsh, D. O.; Seymour, J. D.; Codd, S. L., Biofilm Detection in a Model Well-Bore Environment Using Low-Field NMR. *Groundwater Monitoring & Remediation* **2015**, DOI: 10.1111/gwmr.12117.

Kirkland, C. M.; Codd, S. L., Low-field Borehole NMR Applications in the Near-Surface Environment. *Vadose Zone Journal* **2017**, DOI 10.2136/vzj2017.01.0007.

Washburn, K. E.; Anderssen, E.; Vogt, S. J.; Seymour, J. D.; Birdwell, J. E.; Kirkland, C. M.; Codd, S. L., Simultaneous Gaussian and exponential inversion for improved analysis of shales by NMR relaxometry. *J. Magn. Reson.* **2015**, *250*, 7-16.

Herrling, M. P.; Weisbrodt, J.; Kirkland, C. M.; Williamson, N. H.; Lackner, S.; Codd, S. L.; Seymour, J. D.; Guthausen, G.; Horn, H., NMR investigation of water diffusion in different biofilm structures. *Biotechnol. Bioeng.* **2017**.

(d) Synergistic Activities

1. Service: Professional Mentor, MSU Chapter, Engineers Without Borders (2013 – present)
Professional mentor in support of water and sanitation projects in Kenya
Graduate Student Ambassador, MSU COE (2013 – 2016)
Faculty-nominated graduate student representative
2. Teaching: Instructor, EENV 340, Principles of Environmental Engineering (Sp. 2016, Sp 2017)
Co-Instructor, EENV 445 Hazardous Waste Treatment (F 2015)
Teaching Assistant, EGEN 505 Adv. Engineering Analysis
3. Presented: International conferences (MRPM: 2014, 2016, 2018; ICMRM 2015; SAGEEP 2017; IWA Biofilm Reactors, 2017: IWA Granular Sludge 2018 – *invited keynote speaker*, Interpore 2018) and seminars related to research at MSU; TU Delft, NL; Wageningen University and Research, NL; and RWTH-Aachen University, Aachen, Germany.
4. International Collaborations: Graduate Research Opportunities Worldwide (GROW) program for NSF GRFP Fellows at Delft University of Technology (TU Delft), Delft, NL and Wageningen University and Research, Wageningen, NL, 2016
Ongoing testing contract with TU Delft (2017-2019)