James D. Rees

Curriculum Vitae

EDUCATION

PhD, Electrical Engineering, Rensselaer Polytechnic Institute, 2019
Thesis: "*Shewanella oneidensis* MR-1 as an avenue for green nanoparticle biosynthesis and next-generation biosensing"

B.A., Physics, Oberlin College, 2011

PROFESSIONAL APPOINTMENTS

2021-Present Lecturer, Rensselaer Polytechnic Institute

2019-2020 Postdoctoral Researcher, Darrin Fresh Water Institute, Rensselaer Polytechnic Institute

PUBLICATIONS

Peer-Reviewed Publications

J. D. Rees, Y. A. Gorby, and S. M. Sawyer, "Synthesis and characterization of molybendum disulfide nanoparticles in *Shewanella oneidensis* MR-1 biofilms," *AVS Biointerphases*, vol. 15(4), 2020, p. 041006.

Manuscripts in Submission

N. B. Stanton, J.D. Rees, "From environmental futures to alterities: relating and speculating with microbes and human nature(s)," *World Futures Review*

AWARDS AND HONORS

2019 Three-Minute Thesis Competition Finalist, Rensselaer Polytechnic Institute

2017 Energy Fellowship Honorable Mention, Link Foundation

GRANTS AND FELLOWSHIPS

2023-2026 National Science Foundation, SitS Socializing Soil: Enhancing Community CoOperation with Iterative Sensor Research (S3-ECO-wISeR)

CONFERENCE ACTIVITY

2020 "Engineering with trickster microorganisms and their assemblages," Northeast STS Conference, March 7

2019 "Streak plating and silicon: an STS re-examining of engineering from within the discipline," 4S New Orleans, September 7

2019 "Biosynthesis of molybdenum nanoparticles using the metal-reducing bacterium *Shewanella oneidensis*," 61st Electronic Materials Conference, June 27

2018 "Behavior of *Shewanella oneidensis* MR-1 in a sulfur and zinc-rich medium and its applications for biosensing and biomaterials," AVS Pacific Rim Symposium on Surfaces, Coatings and Interfaces, December 4

TEACHING EXPERIENCE

Courses Taught as Instructor

Fields and Waves
Electronic Instrumentation
Introduction to Engineering Design
Multidisciplinary Design Lab
Embedded Control
Computer Components and Operations
Computer Architecture, Networks and Operating Systems

Courses Taught as Teaching Assistant

Fields and Waves
Electric Circuits
Electronic Instrumentation
Introduction to Philosophy
Introduction to Logic
Law and Public Policy
Cognitive Modeling

RESEARCH EXPERIENCE

2023-Present Principal Investigator, NSF S3-ECO-wISeR
Assisted with the creation of a biosensor in which a coculture of two bacteria produced electrode current in the presence of arsenic.

2019-2020 Postdoctoral Researcher, Rensselaer Polytechnic Institute
Developed techniques for the detection of nitrate using bacterial biofilms growing on electrodes. Used *Shewnanella oneidensis* MR-1 bacteria to synthesize tungsten nanomaterials with semiconducting properties.

2016-2019 Graduate Research Assistant, Rensselaer Polytechnic Institute
Demonstrated biosynthesis of metal sulfide nanomaterials using *Shewanella oneidensis* MR-1.

2014-2015 Graduate Research Assistant, Rensselaer Polytechnic Institute
Designed and simulated circuits using Josephson junctions and rapid single-flux quantum (RSFQ) technology

PROFESSIONAL SERVICE

Manuscript Review

2021 *Journal of Sulfur Chemistry*

COMMUNITY INVOLVEMENT

2018-2019 Volunteer scientist, NATURE Lab, The Sanctuary for Independent Media, Troy, NY. Created public science demonstrations on aquaponics and insect biodegradation of polystyrene.

MEDIA COVERAGE

2020 "Metal-breathing bacteria synthesize high-tech material," *Scientific American*, online. https://www.scientificamerican.com/article/metal-breathing-bacteria-synthesize-high-tech-material/

PROFESSIONAL MEMBERSHIPS

IEEE