**Approved by the Regents**
**May 17, 2012**

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Jeremy D. Semrau, associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering, associate professor of environment, without tenure, Program in the Environment, College of Literature, Science, and the Arts, and associate professor of natural resources and environment, without tenure, School of Natural Resources and Environment, is recommended for promotion to professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering, professor of environment, without tenure, College of Literature, Science, and the Arts and professor of natural resources and environment, without tenure, School of Natural Resources and Environment.

Academic Degrees:

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| Ph.D. | 1995 | California Institute of Technology, Environmental Engineering Science, Pasadena, CA |
| M.S. | 1989 | California Institute of Technology, Environmental Engineering Science, Pasadena, CA |
| B.S. | 1988 | University of Texas, Civil Engineering, Austin, TX |

Professional Record:

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| 2010 – present | Associate Professor (without tenure), Program in the Environment, College of Literature, Science, and the Arts, University of Michigan |
| 2004 – present | Associate Professor (without tenure), School of Natural Resources and Environment, University of Michigan |
| 2001 – present | Associate Professor (with tenure), Department of Civil and Environmental Engineering, College of Engineering, University of Michigan |
| 1995 – 2001 | Assistant Professor, Department of Civil and Environmental Engineering, College of Engineering, University of Michigan |

Summary of Evaluation:

Teaching: Professor Semrau is an excellent mentor and teacher, both inside and outside of the classroom. He has introduced new courses at the University of Michigan that have enhanced the undergraduate experience. His graduate student mentoring has been exemplary, and the impact of his efforts in undergraduate and graduate education is obvious in three different colleges in the University. His dedication to undergraduate teaching is best exemplified by his teaching of the freshman introductory engineering course, ENG 100 Introduction to Engineering: Project EyE, Engineering your Environment, which combined engineering with urban planning, natural resources, public policy, environmental science and business to ensure holistic solutions are developed such that human activities can become more sustainable. In LS&A, ENVIRON 407 (Sustainable Cities) has become a required element of the curriculum. Professor Semrau regularly has undergraduates working in his lab; his mentoring has led to seven papers in top-tier peer-reviewed archival journals in his field co-authored by undergraduates, one of which was the first author. Finally, Professor Semrau also began the Student Sustainability Initiative, an independent student coordinating group that integrates and promotes student organizations with sustainability goals at Michigan such that the University is a national leader in campus sustainability. His excellence in teaching has also been recognized by teaching awards: the College of Engineering Vulcans Excellence in Teaching Award; the ASCE Michigan Student Chapter - Professor of the Year Award, the CEE Departmental Award for Excellence in Teaching, and the James M. Robbins Award for Excellence in Teaching from the Great Lakes District of the National Civil Engineering honor society, Chi Epsilon.

Research: Professor Semrau is an internationally recognized expert in the study and application of methane-oxidizing bacteria, or methanotrophs, and has also been instrumental in leading the Graham Environmental Sustainability Institute initiatives that promote sustainability research at Michigan. His research on methanotrophy has great breadth and depth, with detailed interdisciplinary studies on many issues. He developed and introduced advanced molecular techniques into environmental engineering for rapid quantification of microbial activity in complex environments. He also has conducted detailed analyses of genomic sequences of multiple methanotrophs that will enhance the understanding of the biochemistry, biology, ecology, and evolution of methanotrophy. His research work has very high visibility and he is a recognized international expert in methanotrophy. His work is consistently published in high-impact journals in chemistry, microbiology, environmental science and environmental engineering. He has given invited talks on his research throughout the world at both peer institutions and international conferences with over 50 articles in peer-reviewed journals that have been cited over 1000 times. Professor Semrau has also actively promoted the University of Michigan, helping to establish UM as a global leader in environmental sustainability research. He has given numerous invited presentations to industrial groups and at international academic conferences on the activities of the Graham Institute, and the research projects he supported while serving as the Graham Fellow for Research Development.

Recent and Significant Publications:


"Characterization of a novel facultative Methylocystis species capable of growth on methane, acetate, and ethanol", J. Im, S-W. Lee, S. Yoon, A. A. DiSpirito, and J. D. Semrau, *Environmental Microbiology Reports*, 3:174-181, 2011.

"Constitutive expression of pMMO by Methylocystis strain SB2 when grown on multi-carbon substrates: implications for biodegradation of chlorinated ethenes," S. Yoon, J. Im, N. Bandow, A. A. DiSpirito, and J. D. Semrau, *Environmental Microbiology Reports*, 3:182-188, 2011.

"Facultative Methanotrophy: False Leads, True Results, and Suggestions for Future Research," J. D. Semrau, A. A. DiSpirito, and S. Vuilleumier, *FEMS Microbiology Letters*, 323:1-12, 2011.

"An Assay for Screening Microbial Cultures for Chalkophore Production," S. Yoon, A. A. DiSpirito, S. M. Kraemer, and J. D. Semrau, *Environmental Microbiology Reports*, 2: 295-303, 2010.

"Methanotrophs and Copper," J. D, Semrau, A. A. DiSpirito, and S. Yoon, *FEMS Microbiology Reviews*, 34:496-531, 2010.

"Effect of nutrient and selective inhibitor amendments on methane oxidation, nitrous oxide production, and key gene presence and expression in landfill cover soils: characterization of the role of methanotrophs, nitrifiers, and denitrifiers," S-W. Lee, J. Im, A. A. DiSpirito, L. Bodrossy, M. J. Barcelona, and J. D. Semrau, *Applied Microbiology and Biotechnology*, 85: 389-403, 2009.

"Mössbauer Studies of the Membrane-Associated Methane Monooxygenase from Methylococcus capsulatus Bath: Evidence for a Diiron Center," M. Martinho, D. W. Choi, A. A. DiSpirito, W. E. Antholine, J. D. Semrau, and E. Münck, *Journal of the American Chemical Society*, 129:15783-15785, 2007.


Service: Professor Semrau's contributions to service have been excellent at the University, national and international levels. He has served as graduate program advisor in the Environmental and Water Resources Engineering Program and graduate chair of the Department of Civil and Environmental Engineering. He was the lead faculty member in the team that created the Graham Environmental Sustainability Institute in 2006 and he also served as the Graham Fellow for Research from 2006 to 2009. He is currently serving as associate director of the Program in the Environment. He has served as associate editor of two prestigious journals (*Applied and Environmental Microbiology* and *Journal of Microbiology*) and has also served the local community. For his outstanding efforts, he was the recipient of the College of Engineering Monroe-Brown Service Excellence Award in 2010.

External Reviewers:
Reviewer A: "Dr. Semrau is the world's expert in understanding these factors, the microbial communities, and the potential for mitigating methane efflux from landfills."

Reviewer B: "Prof. Semrau is internationally recognized for his work in the area of methanotrophy (and also methylotrophy), and is an outstanding microbiologist, molecular biologist, and environmental scientist…Prof. Semrau is one of the world leaders in this field…"

Reviewer C: "…there is no doubt in my mind that he would be overwhelmingly recommended for promotion, and that this recommendation would be enacted without any hesitation by the administration."

Reviewer D: "…he has clearly distinguished himself as a prominent, productive scientist, teacher, and mentor who is grounded in the fundamentals of methanotrophs…and who is aware of society's engineering needs…Dr. Jeremy Semrau's academic stature and achievements would qualify him for promotion to the position of full professor here at [my university]."

Reviewer E: "…Prof. Semrau is a real jewel in the Department's crown, as well as in the University's royal scepter. He is an exemplary faculty member to be greatly proud of, and has clearly merited promotion to Full Professor."

Reviewer F: "…Dr. Semrau has established himself as an international leader in his field of research. He is an excellent scientist doing basic research, but also does applied research as an engineer on important topics, such as the mitigation of greenhouse gas emissions. I believe that he would be promoted to Full Professor in civil and environmental engineering at the other top tier university programs."

Summary of Recommendation: Professor Semrau is a very prominent and very productive environmental engineer who has made significant contributions to the field of environmental microbiology and sustainability. He is an excellent teacher and mentor; and he is a leader who contributes both in external and internal service. It is with the support of the College of Engineering Executive Committee that we recommend Jeremy D. Semrau for promotion to professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering, professor of environment, without tenure, College of Literature, Science, and the Arts, and professor of natural resources and environment, without tenure, School of Natural Resources and the Environment.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

Terrence J. McDonald
Arthur F. Thurnau Professor, Professor of History and Dean, College of Literature, Science, and the Arts

Marie Lynn Miranda
Professor and Dean
School of Natural Resources and Environment

May 2012