

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Civil and Environmental Engineering

Brian R. Ellis, assistant professor of civil and environmental engineering, Department of Civil and Environmental Engineering, College of Engineering, is recommended for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2012	Princeton University, Civil & Environmental. Engineering, Princeton, NJ
M.A.	2009	Princeton University, Civil & Environmental. Engineering, Princeton, NJ
B.S.	2006	University of Michigan, Environmental Geosciences & Economics, Ann Arbor, MI

Professional Record:

2014 – Present	Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan
2012 – 2017	NSF Science Engineering and Education for Sustainability (SEES) Fellow, Civil and Environmental Engineering, University of Michigan
2012 – 2014	Michigan Society of Fellows Postdoctoral Scholar, Civil & Environmental Engineering, University of Michigan

Summary Evaluation

Teaching: Professor Ellis teaches two of the core courses of the program in Environmental Engineering: Sustainable Engineering Principles (CEE 265) and Aquatic Chemistry (CEE 481/581). Although CEE 265 is one of the largest courses taught in the department, Professor Ellis has received excellent student feedback in CEE 265 for his ability to engage students despite the large course size. Students applaud him for his enthusiasm for the material and for fostering a learning environment that encourages open-ended discussion. Professor Ellis has greatly shaped the course by expanding the course content and by creating an expansive library of problem sets for all instructors of the course to use. At the graduate level, he has taught the EWRE Graduate Seminar (CEE881) and has developed a new graduate course in Subsurface Resource Utilization (CEE501) that will be offered next semester (Winter 2020). His teaching reviews are very strong: all Q1 and Q2 near or above 4.0 with many approaching 5.0. Undergraduate and graduate student letter writers alike praise Professor Ellis for his exceptional instruction, energy, passion, and knowledge of the subject matter. He has advised or co-advised seven Ph.D. students, three of whom have graduated (two as co-chair). He has also mentored in research 12 M.S. students and eight undergraduates, and has served on 14 Ph.D. dissertation committees. His advisees uniformly praise him for unwavering support and career guidance. His strong teaching and mentoring record at all levels show Professor Ellis is having a positive impact on the educational experiences of undergraduate and graduate students in the College of Engineering.

Research: Professor Ellis has developed a strong research portfolio. Unique among his peer cohort, Professor Ellis is an expert in reactive transport modeling and microscopic imaging tools, and has designed and customized one-of-a-kind high pressure and temperature batch and flow-through experimental apparatus to assess the impact of energy extraction processes on the near and deep subsurface environments. As noted by his external evaluators, this unique skill set has allowed him to make impactful contributions to the field through his published work. Professor Ellis has published nearly 30 peer-reviewed papers in top journals in his field. His funding record includes significant support from highly competitive sources, ~\$1.8M as PI with ~\$1.4M as his share, enabling him to support an excellent research team. The consensus of his external letter writers is that Professor Ellis is an emerging leader in his field, he ranks well among his cohort, he is gaining national and international recognition for his scholarly research work, and he is on an excellent trajectory for future and sustained success.

Recent and Significant Publications:

- Das, S., Adeoye, J., Dhiman, I., Bilheau, H., Ellis, B.R., “Imbibition of mixed charge surfactant fluids in shale fractures,” *Energy & Fuels*. 2019; 33(4): 2839-2847.
- Fan, W., Hayes, K.F., Ellis, B.R. “Estimating radium activity in shale gas produced brine,” *Environmental Science and Technology*. 2018; 52(18): 10839-1084.
- Menefee, A.H., Giammer, D.E., Ellis, B.R., “Permanent CO₂ trapping through localized and chemical gradient-driven basalt carbonation,” *Environmental Science and Technology*. 2018; 52(15): 8954-8964.
- Menefee, A. H., Li, P., Giammar, D.E., Ellis, B.R., “The roles of transport limitations and mineral heterogeneity in carbonation of fractured basalts,” *Environmental Science and Technology*. 2017; 51(16): 9352-9362.
- Chen, L., Miller, S.A., Ellis, B.R., “Comparative human toxicity impact of electricity produced from shale gas and coal,” *Environmental Science and Technology*, 2017; 51(21): 13018-13027.

Service: Professor Ellis has been a committed participant in a range of service activities. Externally, he has actively engaged with professional societies (ACS-American Chemical Society, ASCE-American Society of Civil Engineers, and AEESP-Association of Environmental Engineering Professors), serving as organizer of national symposia, NSF panelist and workshop organizer, reviewer of journal papers and proposals, and a member of key technical committees of AEESP to promote diversity. His notable outreach efforts cover student cohorts at all educational levels, including K-12 (Future-U and Wolverine Pathways programs), undergraduate (Focus CEE), and graduate students (Environmental and Water Resources Engineering program adviser). Internally he has taken on important and time-consuming roles such as the graduate program advisor, membership on the department’s graduate committee and recruitment committee, and important CoE and University-wide ad hoc committees.

External Reviewers:

Reviewer A: “Professor Ellis has a strong research record. ... I have always found Professor Ellis’ papers [to] be well organized, well written, novel, and developed to high standards of scientific quality.”

Reviewer B: “Dr. Ellis [sic] work helps us address many important challenges in subsurface energy engineering field, and he has successfully established his presence in the field. ... he is an emerging leader. ... His findings will excite many colleagues in our field.”

Reviewer C: “...Prof. Brian Ellis is emerging as a leader in the reactive transport community...he has done a remarkable job to date in establishing his research program and producing high-quality manuscripts. His current career trajectory holds promise for continued scientific output in the years to come.”

Reviewer D: “His group is one of the few research groups in this field, which can perform experimental studies combined with unique imaging and geochemical modeling. ... Dr. Ellis is an ambitious, meticulous and dedicated researcher...He is quickly becoming the leader in his peer group...”

Reviewer E: “...Dr. Ellis is one of the leading faculty [of his cohort] in his area, and that area is increasingly important as we face the challenges of climate change and rapid development in the oil and gas industry.”

Reviewer F: “Dr. Ellis is starting to gain national and international recognition for his research. ... Dr. Ellis is exceeding the bar for promotion to associate professor with tenure. His scholarly activity and impact are excellent, and it appears that he can sustain this...”

Summary of Recommendation: Professor Ellis is a nationally visible and highly respected researcher. He is an excellent teacher and mentor of undergraduate and graduate students. Professor Ellis has made significant service contributions to professional societies, as well as within the college and local community. It is with the support of the College of Engineering Executive Committee that I recommend Brian R. Ellis for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.



Alec D. Gallimore, Ph.D.
Robert J. Vlastic Dean of Engineering
College of Engineering

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