

PROMOTION RECOMMENDATION  
The University of Michigan  
School for Environment and Sustainability

Ming Xu, associate professor of environment and sustainability, with tenure, School for Environment and Sustainability, is recommended for promotion to professor of environment and sustainability, with tenure, School for Environment and Sustainability [also associate professor of civil and environmental engineering, without tenure, College of Engineering].

Academic Degrees:

Ph.D.	2009	Arizona State University, Civil and Environmental Engineering, Tempe, AZ
M.S.	2006	Tsinghua University, Environmental Science and Engineering, Beijing, China,
B.S.	2003	Tsinghua University, Environmental Engineering, Beijing, China

Professional Record:

2017 – present	Director of China Programs, School for Environment and Sustainability
2016 - present	Associate Professor, School for Environment and Sustainability, University of Michigan
2016 - present	Associate Professor, Department of Civil and Environmental Engineering, College of Engineering, University of Michigan
2016 - present	Affiliated Faculty, Michigan Institute for Computational Discovery and Engineering, University of Michigan
2015 - 2019	Faculty Associate, China Data Center, University of Michigan
2015 - present	Affiliated Faculty, Michigan Institute for Data Science
2012 - present	Co-Director, Graduate Certificate Program in Industrial Ecology, School for Environment and Sustainability, University of Michigan
2012 - present	Faculty Associate, Lieberthal-Rogel Center for Chinese Studies, University of Michigan
2011 - present	Faculty Affiliate, Erb Institute for Global Sustainable Enterprise, University of Michigan
2011 - 2016	Assistant Professor, Department of Civil and Environmental Engineering, College of Engineering, University of Michigan
2010 - present	Faculty Associate, Program in the Environment, University of Michigan
2010 - 2016	Assistant Professor, School of Natural Resources and Environment, University of Michigan
2009 - 2010	Post-doctoral Fellow, Brook Byers Institute for Sustainable Systems, Georgia Institute of Technology

Summary of Evaluation:

Teaching: Professor Xu has taught both graduate and undergraduate courses in SEAS and PitE. His teaching has focused on creating greater knowledge and familiarity among his students in relation to input-output analysis, systems thinking, and life-cycle analysis at the graduate level. At the undergraduate level, he has taught students how attention to sustainability can create greater competitive advantage for organizations. He also led the creation of a new collaborative exchange program for an Accelerated Master's Degree at SEAS with the School of Environment at Tsinghua University, the first of its kind for UM. Professor Xu is an effective teacher, with seven course offerings for graduate and undergraduate students over the past five years. Since his last promotion, in addition to his teaching, he has chaired the dissertation committees of four PhD students (one

graduated), served on the committees of six PhD students as member, and chaired the committees for eight MS students. He has also advised two MS student projects, and served as mentor to three post-doctoral fellows. Professor Xu is a careful mentor to his post-doctoral fellows, and PhD, MS, and undergraduate students. He takes the mentoring of both thesis and project students seriously, and has worked actively to involve his mentees in his research and to train them for placement in research and practice positions.

Research: Professor Xu's research program is situated in the field of Industrial Ecology. Within this field, he conducts research on how consumption of resources and energy drives environmental change, both by examining environmental footprints of human and societal consumption, and the lifecycle environmental impacts of new technologies – especially at the micro scale, for example on people, products, or buildings. His research aims at both methodological innovations and new empirical knowledge.

Professor Xu has built an admirable and well-funded research program, with evidence of substantial research strengths and achievements. In the last two years, in particular, he has undertaken new initiatives that provide a more synthesizing frame for his work, and service to the university and to his field that is both effective and valued more broadly. His trajectory of research productivity is high and likely to continue. He publishes frequently in top-tier journals in his field and his record when it comes to high-profile external grants is exemplary. He has achieved a high level of recognition among his peers. We expect him to continue to perform at a high level of research output, graduate student mentorship, and service to the profession. Professor Xu was honored in 2015 with the Robert A. Laudise Medal from the International Society for Industrial Ecology (ISIE) in 2015.

A productive scholar, Professor Xu's publications appear in very highly rated journals. They include, for example, *Applied Energy* (Impact Factor: 8.4), the *Journal of Cleaner Production* (Impact Factor: 6.4), and *Environmental Science and Technology*, one of the leading journals in his field (Impact Factor: 7.15). In addition to an exceptional number of peer-reviewed journal articles since he joined Michigan, he is author of many refereed conference papers, conference presentations, and editorials. Professor Xu is an active researcher with a substantial record of external support for his research and scholarly activities. Since arriving at SEAS, he has won nine external grants awards, of which seven are from NSF and of which he has served as the PI on six. These awards are in addition to 21 smaller grants he has won internally. His sustained track record of funding from both internal and external grants has amounts to more than \$1.8M, with over \$0.7M generated from new awards since his last promotion. The continuous funding level is accompanied by broadening collaborative teaming with co-PIs from both within SEAS and outside, including Statistics and Civil and Environmental Engineering. The level of external funding indicates that the importance and quality of Professor Xu's research are recognized by his peers.

#### Recent and Significant Publications:

Qu, S.; Li, Y.; Liang, S.; Yuan, J.-H.; Xu, M.\* Virtual CO<sub>2</sub> emission flows in the global electricity trade network. *Environmental Science & Technology* 2018, 52 (11), 6666-6675. (Cited 3 times as of Oct 3, 2019)

Hou, P.; Cai, J.-R.; Qu, S.; Xu, M.\* Estimating missing unit process data in life cycle assessment using a similarity-based approach. *Environmental Science & Technology* 2018, 52 (9), 5259-5267. (Cited 5 times as of Oct 3, 2019)

Xu, M.\*; Cui, Y.-Y.; Hu, M.; Xu, X.-K.; Zhang, Z.-C.; Liang, S.; Qu, S. Supply chain sustainability risk and assessment. *Journal of Cleaner Production* 2019, 225, 857-867 (Cited six times as of Oct 3, 2019)

Service: Professor Xu has undertaken a variety of service activities and served in several important service roles beyond SEAS and UM, including the normal service activities that all faculty aspiring for leadership perform such as membership of editorial boards, service on committees, review activities for journals, participation in conferences, and affiliations with disciplinary and interdisciplinary professional societies. Professor Xu has also undertaken more ambitious and far-reaching service roles at SEAS and for UM. The most recent, and perhaps the most visible of these was the international conference he co-organized on US-China Environment and Sustainability cooperation that brought a large number of accomplished scholars, members of national academies, and editors from Science and Nature to the University of Michigan campus. In addition to his key role in enabling this conference to happen, he has also been very active in promoting international and global engagement at UM, with a particular focus on China. He has served for several years on the Global Engagement committee for SEAS, been a part of the provost's China Working Group, the founding chair of the International Council on Resource Sustainability among other leadership and service roles. We view these service activities and leadership roles as being evidence of Professor Xu's engagement and investment at the University of Michigan.

External Reviewers:

Reviewer A: "Ming Xu is a very productive scholar, with 96 referred articles, three book chapters, 16 refereed conference papers, and nine commentary-style publications to date, with roughly half of that output occurring after his prior promotion to associate professor in 2016. ...Ming Xu is an internationally recognized scholar in environmental science and engineering... In sum, I consider this an easy case. I think he deserves this promotion."

Reviewer B: "His development of ... detailed environmental data-base for China is an extremely valuable research tool. The resulting linkage to and with Chinese scholars and institutions is of significant value to the university (and to the US); that link alone could be an argument for his promotion, though his performance as a teacher and researcher at UM is sufficiently impressive without that icing on the proverbial cake."

Reviewer C: "I consider Prof. Xu as one of the very few outstanding, up and coming leaders in industrial ecology. His credential is certainly on par with successful applicants for professorial level at my institute. I therefore give my wholehearted support of Prof. Xu for this promotion."

Reviewer D: "I consider Professor Ming Xu in an outstanding position when compared with other in his peer group working in Industrial ecology, considering the quality and the quantity of his production and achievements. This has been formally recognized by many awards he has earned during his career."

Reviewer E: "He performs indeed well compared with the group of peers... (I did provide letters for several of their promotions). He clearly surpasses this peer group in terms of professional recognitions and awards received, which I think is a proper reflection of his position... Nonetheless, Professor Xu's strongest suit at this point is his outstanding professional service. His research meets the expectations that I would have to a professor in our field but does not surpass them by a large margin... I would recommend to Professor Xu that he consider dedicating himself to a single stream of work, at least for a period."

Reviewer F: "What I find most impressive about Dr Xu's research is his work on the industrial ecology of China – and more specifically his development of a Chinese Environmentally Extended Input-Output database... Although, it is possibly still too early to assess the impacts of this work, the

numbers that Professor Xu provides for the visits, downloads and users of the database are great... I read the three contributions attached to Professor Xu's package, and broadly would classify them as good, but not outstanding..."

Reviewer G: "...[Professor Ming Xu has been] highly productive since his promotion to Associate Professor (with tenure), publishing 60 of the papers during that time. Many of his publications are in top journals in the field of industrial ecology and environmental science including Environmental Science & Technology, Applied Energy and Plos One. His number of citations and H-index are very good for someone at this stage of their career in this field... overall quality of the work in the papers I have read is high. The papers present novel work and contributions to the field on important challenges in industrial ecology... I would rank Dr. Xu among the top 5% of scholars in his peer group. His productivity is excellent and he is doing meaningful work, he is passionate about his research, teaching and service. Overall he is an excellent scholar."

Reviewer H: "His publication productivity is outstanding and he delivers continuously top quality.... My best advice to the School for Environment and Sustainability at the University of Michigan is that you should do everything to keep Ming Xu at your university. He amply meets all requirements to be promoted to a full professor and I am convinced that with your support, he will continue to make the School for Environment and Sustainability at the University of Michigan a global leader in Industrial Ecology."

Summary of Recommendation: At the University of Michigan, we expect excellence and creativity in research, teaching, and service - and Ming Xu does all three of them very well. Professor Xu is a highly regarded researcher whose work is helping to define the future of the field of industrial ecology. He publishes in the top journals in his field and successfully competes for funding in a challenging funding environment. He is a dedicated advisor, mentor, and teacher who is committed to consistently improving his classroom performance. His service is exceptional. I strongly support Ming Xu for promotion to professor of environment and sustainability, with tenure, School for Environment and Sustainability.



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Jonathan T. Overpeck  
Samuel A. Graham Dean  
School for Environment and Sustainability