Approved by the Regents
May 20, 2021

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Materials Science and Engineering

Liang Qi, assistant professor of materials science and engineering, Department of Materials Science and Engineering, College of Engineering, is recommended for promotion to associate professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2009	University of Pennsylvania, Material Science and Engineering, Philadelphia, PA
M.S.	2007	Ohio State University, Material Science and Engineering, Columbus, OH
B.E.	2003	Tsinghua University, Materials Science and Engineering, Beijing, China

Professional Record:

2015 – present	Assistant Professor, Department of Materials Science and Engineering, University of Michigan
2012 – 2014	Assistant Project Scientist, Department of Materials Science and Engineering, University of California, Berkeley, CA
2011 – 2012	Post-doctoral Associate, Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA
2009 – 2011	Post-doctoral Associate, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA

Summary of Evaluation:

Teaching: Professor Qi is a dedicated and committed teacher and mentor and has made significant new contributions since accepting his position in the Department of Materials Science and Engineering (MSE) in January 2015. Professor Qi introduced the hands-on experiences of multiscale materials modeling in senior undergraduate and graduate courses. In MSE 470, he taught the fundamental statistics for the advanced thermodynamic modeling of complex alloy systems. Professor Qi also created special projects that required students to apply the integrated computational materials engineering (ICME) in physical metallurgy designs. The students needed to perform ICME study cases, discuss their potential applications/limitations, and make the final project presentations. In MSE 520, he taught dislocation theory and fundamental techniques of multiscale materials modeling from atomistic scales to mesoscales. Professor Qi has graduated two Ph.D. students and has another four in progress. He also serves on committees for several other Ph.D. students. In addition, he mentors a number of M.S. and undergraduate students, as well as post-doctoral scholars.

Research: Professor Qi has been very productive in terms of his efforts to publish novel, important scientific contributions and to support his research effort. Professor Qi's research is investigating the mechanical and chemical properties of materials by applying theoretical and computational tools, including first-principles calculations, atomistic simulations, multiscale

modeling, and machine learning. Professor Qi has been successful in securing research funding, including an NSF CAREER Award (2019). Since his arrival here, his accumulated share in all seven awarded external research grants is $1.46M. His curriculum vitae lists over 50 articles in refereed journals, with another seven publications submitted in 2020. His publications appear in top journals in materials science, as well as some in high-profile journals such as *Nature* Materials, *Proceedings of the National Academy of* Sciences, and *Nature Communications*. According to Google Scholar, his h-index is 25 and his publications have received 4,377 citations.

Recent and Significant Publications:

Lianfeng Zou, Chaoming Yang, Yinkai Lei, Dmitri Zakharov, Jörg M.K. Wiezorek, Dong Su, Qiyue Yin, Jonathan Li, Zhenyu Liu, Eric A. Stach, Judith C Yang, Liang Qi, Guofeng Wang, Guangwen Zhou, "Dislocation nucleation facilitated by atomic segregation," *Nature Materials*, 01/2018; 17: 56–63.

Chaoming Yang, Liang Qi, "Modified embedded-atom method potential of niobium for studies on mechanical properties," *Computational Materials Science*, 04/2019; 161: 351-363.

Chaoming Yang, Mingfei Zhang, Liang Qi, "Grain boundary structure search by using an evolutionary algorithm with effective mutation methods," *Computational Materials Science*, 11/2020; 184: 109812.

Yong-Jie Hu, Ge Zhao, Baiyu Zhang, Chaoming Yang, Mingfei Zhang, Zi-Kui Liu, Xiaofeng Qian, Liang Qi, "Local electronic descriptors for solute-defect interactions in bcc refractory metals," *Nature Communications*, 10/2019; 10: 4484.

Yong-Jie Hu, Ge Zhao, Mingfei Zhang, Bin, Tyler Del Rose, Qian Zhao, Qun Zu, Yang Chen, Xuekun Sun, Maarten de Jong, Liang Qi, "Predicting densities and elastic moduli of SiO2-based glasses by machine learning," *Computational Materials*, 03/2020; 6: 25.

Service: Since Fall 2018, Professor Qi has served on the MSE Master's committee and Ph.D. admission sub-committee. In both committees, he is involved in the Ph.D. and Master's student recruitment by evaluating application materials. Professor Qi has served on a selection committee for the College of Engineering Leaders and Honors Awards for undergraduate students in 2016 and 2020. He is also a member of four committees in the Minerals, Metals and Materials Society (TMS), one of the largest professional societies in metallurgies and materials research. He has developed a diverse research group of undergraduate and graduate students and has been proactive in promoting DEI as a member of department chair and faculty search committees. In addition, he has instructed a hands-on experimental station for the Washtenaw Elementary Science Olympiad (WESO) tournament several times, and advised the C-PHOM High School Research Program supported by NSF.

External Reviewers:

Reviewer A: "… I have confidence that Dr. Qi is likely to build a solid group in the field of computational materials engineering and his outstanding productivity will continue. He has an excellent case for promotion to Tenure."

Reviewer B: "… Prof. Liang Qi fully merits promotion to Associate Professor with Tenure, having an outstanding record of research accomplishments coupled with innovative ideas, breadth, and connections to real materials. He is an excellent asset for U. Michigan, and

complementary to the very strong tenured faculty. I give him my highest recommendation with no hesitation."

Reviewer C: "I believe that Prof. Liang Qi is clearly well above the standard to consider for promotion with tenure to Associate Professor at our institution. I can see many reasons why keeping him will bring much-needed capabilities and energy to computational materials science in your department, and help you engage more broadly across the UM campus."

Reviewer D: "…Dr. Liang Qi has significant potential to succeed as a tenured faculty member at the University of Michigan in MSE. Over the past two years he has demonstrated a trend towards exerting intellectual vision and leadership."

Reviewer E: "… Dr. Liang Qi has an excellent record of scholarly accomplishment. I strongly support his promotion to the rank of Associate Professor with tenure."

Summary of Recommendation: Professor Qi is a very prominent and productive leader in the field of computational materials. He is a natural educator and has demonstrated an ability to attract high-quality students and post-doctoral researchers. He is an active contributor to his department, the college, the university, and to his profession. It is with the support of the College of Engineering Executive Committee that I recommend Liang Qi for promotion to associate professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, College of Engineering.

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

May 2021