Approved by the Regents
May 19, 2022

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Chemical Engineering

Andrej Lenert, assistant professor of chemical engineering, Department of Chemical Engineering, College of Engineering, is recommended for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2014	MIT, Mechanical Engineering, Cambridge, MA
M.S.	2010	MIT, Mechanical Engineering, Cambridge, MA
B.S.	2007	University of Iowa, Mechanical Engineering, Iowa City, IA

Professional Record:

2016 – present	Assistant Professor, Department of Chemical Engineering, University of Michigan
2014 – 2016	Post-doctoral Research Fellow, Department of Mechanical Engineering, University of Michigan

Summary of Evaluation:

Teaching: Professor Lenert has taught a core undergraduate class (CHE330) focusing on chemical engineering thermodynamics, an elective graduate course on solar energy conversion that he developed and a survey course for incoming chemical engineering graduate students. He also developed a new elective course (CHE 696/494, ME 599, Fundamentals of Solar Energy Conversion), for graduate students and upper-level undergraduates that is directly related to his research program. Professor Lenert's contribution to the CHE595 course for incoming graduate students included (i) diversity, equity, and inclusion, including the basics of DEI and implicit bias; (ii) how to give research presentations, and how to write, with an emphasis on journal articles. Professor Lenert has consistently demonstrated an ability to teach core courses, develop new technical elective courses, and introduce contemporary topics to existing courses. Professor Lenert has graduated two Ph.D. students as the chair and has another four in progress as either the chair or co-chair, with two of those students expected to graduate this year. He serves as a committee member for an additional five Ph.D. students. In addition, he is active in advising M.S. and undergraduate students as well as mentoring post-doctoral scholars.

Research: Professor Lenert has built a strong research program focused on engineering materials and devices that offer control over the propagation and energy conversion of thermal radiation. He has established capabilities in his group to synthesize new materials for these purposes and has developed well-conceived collaborations with other groups that specialize in additional materials. The applications of his work are in the areas of energy harvesting, solar energy conversion, and radiative cooling. His research is in the top journals in his field including *Nature*, *ACS Nano*, *Joule*, *ACS Applied Materials and Interfaces*. Professor Lenert's publications have been cited 2,386 times and he has established an h-index of 18 (Google

Scholar as of 10/22/2021), attesting to the impact of his work. He is funded through various industry and governmental resources including General Motors, DoE, NSF, and DARPA. Notably, he has been the PI on most of these grants. He has furthered the technology transfer of his research contributions through the pursuit of several provisional/pending patents, and is an advisory board member for both Antora Energy, Inc. and Marigold Power, Inc. Professor Lenert is a 2020 recipient of the 3M Non-Tenured Faculty Award.

Recent and Significant Publications:

A. J. B. Gayle, Z. J. Berquist, Y. Chen, A. J. Hill, J. Hoffman, A. Bielinski, A. Lenert, N.P. Dasgupta, "Tunable Atomic Layer Deposition into UltraHigh-Aspect-Ratio (>60,000:1) Aerogel Monoliths Enabled by Transport Modeling," *Chemistry of Materials*, 2021.

D. Fan , T. Burger, S. McSherry, B. Lee, A. Lenert, S.R. Forrest, "Near-perfect photon utilization in an air-bridge thermophotovoltaic cell," *Nature*, 2020; 586: p. 237-24.

Z. J. Berquist, K. K. Turaczy, A. Lenert, "Plasmon-Enhanced Greenhouse Selectivity for High-Temperature Solar Thermal Energy Conversion," *ACS Nano*, 2020; 14(10): p. 12605-12613.

H. Kim, S. McSherry, B. Brown, A. Lenert, "Selectively Enhancing Solar Scattering for Direct Radiative Cooling through Control of Polymer Nanofiber Morphology," *ACS Applied Materials and Interfaces*, 2020; 12(39): p. 43553-43559.

A. J. Hill, C. Y. Seo , X. Chen, A. Bhat, G. B. Fisher, A. Lenert, J. W. Schwank, "Thermally induced restructuring of Pd@CeO2 and Pd@SiO2 nanoparticles as a strategy for enhancing low-temperature catalytic activity," *ACS Catalysis*, 2020; 10(3): 1731-1741.

Service: Professor Lenert has contributed to his department, college, and profession through numerous service activities. At the department level, he has been the chair of the Recruiting Committee (for prospective incoming graduate students) since 2018, and he was the chair of the Seminar Committee from 2016 to 2018. Currently, in addition to the Recruiting Committee, he is a member of the Graduate Program and Admissions Committee. He also initiated the New Prof Mentorship Lunches that provide an opportunity for incoming faculty to meet senior faculty in a relaxed setting.

Outside his department, Professor Lenert was a co-organizer of the Materials at Michigan Symposium for the UM Bicentennial Event in 2017. He has also chaired sessions, organized workshops, and done other professional service outside the university. For example, he was a session chair at the National Academies of Sciences, Engineering, and Medicine's Frontiers Symposium in 2017, and he was elected as the director of the Transport and Energy Processes Division of the American Institute of Chemical Engineers in 2020.

External Reviewers:

Reviewer A: "Dr. Lenert's professional service reflects a serious commitment, including growing into leadership roles well beyond what is normal or necessary for this career stage."

Reviewer B: "I will also comment briefly on the support for DEI efforts that was evident in his promotion package. This dedication and commitment would make him an asset in any department."

Reviewer C: "By contributing actively to many diverse academic service activities, such as reviewing articles for more than 20 journals, chairing sessions and organizing topics at national and international conferences, guest editing a special issue in the Journal of Photonics for Energy, and reviewing proposals as a panelist, Andrej Lenert demonstrates a *strong engagement* with external institutions."

Reviewer D: "Prof. Lenert certainly is becoming one of the world's leading experts in thermophotovoltaic systems but more broadly, in the area of radiative heat transfer and the surfaces and systems needed to enhance and optimize that heat transfer mode."

Reviewer E: "The work on plasmonic nanoparticles embedded in aerogels is quite clever. The achieved thermal emittance at high temperatures is outstanding... I don't have any doubts that he would be promoted at [my institution] or any other top engineering program."

Summary of Recommendation: Professor Lenert is a talented researcher who addresses important problems in renewable energy solutions. He is a recognized leader in the area of photonic thermal management. He is a valued and dedicated leader in his department, and a dedicated educator and mentor. It is with the support of the College of Engineering Executive Committee that I recommend Andrej Lenert for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, College of Engineering.

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

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