

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Materials Science and Engineering
Department of Chemical Engineering
Macromolecular Science and Engineering Program
Penny W. Stamps School of Art and Design

Max Shtein, associate professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, associate professor of chemical engineering, without tenure, Department of Chemical Engineering, associate professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, and associate professor of art and design, without tenure, Penny W. Stamps School of Art and Design, is recommended for promotion to professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, professor of chemical engineering, without tenure, Department of Chemical Engineering, professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, and professor of art and design, without tenure, Penny W. Stamps School of Art and Design.

Academic Degrees:

Ph.D.	2004	Princeton University, Chemical Engineering, Princeton, NJ
B.S.	1998	University of California, Berkeley, Chemical Engineering, Berkeley, CA

Professional Record:

2010 – present	Associate Professor, with tenure, Department of Materials Science and Engineering, University of Michigan
2010 – present	Associate Professor, without tenure, Macromolecular Science and Engineering Program, University of Michigan
2010 – present	Associate Professor, without tenure, Department of Chemical Engineering, University of Michigan
2010 – present	Associate Professor, without tenure, School of Art and Design, University of Michigan
2008 – 2010	Assistant Professor, School of Art and Design, University of Michigan
2006 – 2010	Assistant Professor, Department of Chemical Engineering, University of Michigan
2004 – 2010	Assistant Professor, Department of Materials Science and Engineering,
2004 – 2010	Assistant Professor, Macromolecular Science and Engineering Program, University of Michigan

Summary of Evaluation:

Teaching: Professor Max Shtein has been extremely effective in the classroom. In every class he teaches, according to numerous student anecdotal comments over the years, he has been able to fully engage the students while seriously stretching their thinking. In mentoring students in research, Professor Shtein has been found to be equally effective. An undergraduate student letter notes, his method is to encourage “his students to think creatively and pushes them to do their best work.” The graduate students are likewise appreciative of Professor Shtein’s mentoring. He has directed the research carried out by 16 Ph.D. students (11 completed), three M.S. students, over 50 undergraduate

students and two post-doctoral research fellows. He has furthermore served on 60 additional Ph.D. committees. In 2007, Professor Shtein was recognized with the College of Engineering Jon R. and Beverly S. Holt Award for Excellence in Teaching.

Research: Professor Shtein has established an outstanding record of distinctively original research and discovery, which has gained him the international recognition and the credibility for sustained funding. His scientific identity is founded on innovative device fabrication, specifically utilizing the electronic properties of small organic molecular materials for photovoltaics, lighting and sensing applications. He has raised over \$7.5M to support his research with 20 past grants, five current grants, and two pending proposals. He is the lead-PI on more than two thirds of these grants, including a prestigious and very competitive Presidential Early Career Award for Scientists and Engineers (PECASE) in 2007. Professor Shtein's publication record is first-rate. He has published over 60 archival journal articles, as well as shorter communications, refereed conference proceeding papers, a book and a book chapter. More than half of his scholarly work has been published since his promotion to Associate Professor. He publishes in prestigious journals including *Nature Materials*, *Nature Communications*, *Advanced Materials*, *Advanced Energy Materials* and *Nano Letters*.

Recent and Significant Publications:

Lamoureux, Aaron; Lee, Kyusang; Shlian, Matthew; Forrest, Stephen R.; Shtein, Max, "Dynamic kirigami structures for integrated solar tracking," *Nature Communications*, 6 (2015) 8092.
Biswas, Shaurjo; Shalev, Olga; Pipe, Kevin P.; Shtein, Max, "Chemical Vapor Jet Deposition of Parylene Polymer Films in Air," *Macromolecules*, 48 (2015) 5550.
Shalev, Olga; Biswas, Shaurjo; Yang, Yongsoo; Eddir, Tareq; Ahanotu, Onye; Lu, Wei; Clarke, Roy; Shtein, Max, "Growth and modelling of spherical crystalline morphologies of molecular materials," *Nature Communications*, 5 (2014) 5204.
Barito, Adam; Sykes, Matthew E.; Huang, Bingyuan; Bilby, David; Frieberg, Bradley; Kim, Jinsang; Green, Peter F.; and Shtein, Max, "Universal Design Principles for Cascade Heterojunction Solar Cells with High Fill Factors and Internal Quantum Efficiencies Approaching 100%," *Advanced Energy Materials*, 4, (2014), DOI:10.1002/aenm.201400216.
Jin, Yansha; Shao, Chen; Kieffer, John; Pipe, Kevin P.; Shtein, Max, "Origins of thermal boundary conductance of interfaces involving organic semiconductors," *Journal of Applied Physics*, 112, (2012) 093503.

Service: Professor Shtein is an active contributor to his scientific and academic communities. Internally, he has served on numerous departmental committees and for the College of Engineering as faculty co-director for the Undergraduate Program in Entrepreneurship. In this latter role, he has been pivotal in stimulating interest among students in developing new technology and other entrepreneurial activities. For his professional community, he has organized many meetings and is a prolific reviewer for journals and government funding agencies.

External Reviewers:

Reviewer A: "I am most impressed with the creativity and quality of work from Dr. Shtein. He has been able to continuously break into new areas and be able to make significant and unique contributions. ...I would not hesitate to recommend Dr. Shtein for promotion at any top institutions."

Reviewer B: "The creativity of his research can be considered a true hallmark of his activities. I believe that Professor Shtein epitomizes scholars of a new generation whose activities transcend the

conventional triptych of research, teaching and service in a defined discipline by integrating entrepreneurship and engaging into multidisciplinary research.”

Reviewer C: “I consider Max one of the most creative people I have met throughout my career and believe that this promotion is well-deserved.”

Reviewer D: “...Professor Max Shtein has accomplished a significant amount of high level and unique research at the University of Michigan these last 5 years. He has established himself both nationally and internationally as a leader in the field and promotion at this time is fully warranted.”

Reviewer E: “...Max Shtein is an outstanding and original scientist of impressive scientific depth and breadth who seems to have all the required qualities for continuing his stellar career in the field of optoelectronics. His work is very highly regarded in the international community and I recommend him to you most strongly and without hesitation for promotion to professor.”

Reviewer F: “The UM students are very fortunate that Max is there. I doubt that there are very many other intuitions [sic] that have this sort of hands on entrepreneurship program, being taught by anyone as gifted or motivated as Max. ...I believe that he deserves this promotion... He is the kind of person that energizes students and gets them to think in exciting new ways.”

Summary of Recommendation: Professor Shtein is an extremely effective teacher in the classroom and in mentoring students in research. He has established an outstanding record of distinctively original research and discovery, which has gained him international recognition and the credibility for sustained funding. He has been an active member of the scientific and academic community. It is with the support of the College of Engineering and Penny W. Stamps School of Art and Design Executive Committees that we recommend Max Shtein for promotion to professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, professor of chemical engineering, without tenure, Department of Chemical Engineering, professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, and professor of art and design, without tenure, Penny W. Stamps School of Art and Design.



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



Gunalan Nadarajan
Dean and Professor
Penny W. Stamps School of Art and Design

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