

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

Neil P. Dasgupta, assistant professor of mechanical engineering, Department of Mechanical Engineering, College of Engineering, is recommended for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2011	Stanford University, Mechanical Engineering, Stanford, CA
M.S.	2006	Stanford University, Civil and Environmental Engineering, Stanford, CA
B.S.	2005	University of Illinois at Urbana-Champaign, Mechanical Engineering, Urbana-Champaign, IL

Professional Record:

2014 – present	Assistant Professor, Department of Mechanical Engineering, University of Michigan
2014 – present	Affiliate Faculty, Applied Physics Program, University of Michigan
2012 – 2012	Post-doctoral Fellow, Department of Chemistry, University of California, Berkeley, Berkeley, CA
2011 – 2011	Post-doctoral Scholar and Instructor, Department of Mechanical Engineering, Stanford University, Stanford, CA

Summary of Evaluation:

Teaching: Professor Dasgupta is an excellent teacher and mentor, who is passionate about engaging his students and sparking their interests in material science. He teaches several courses at the graduate and undergraduate levels, including ME 433 Advanced Energy Solutions. His high teaching evaluation scores are a clear indicator of his exceptional classroom leadership. His students consistently praise his dedication, approachability, and passion. Professor Dasgupta has developed a new, advanced graduate-level course covering the fundamentals of physical and chemical processes of renewable energy and energy storage devices, ME 599 Fundamentals of Renewable Energy Processes, which has filled a gap in the Mechanical Engineering curriculum. Professor Dasgupta has graduated three Ph.D. students (one as co-chair), and is currently mentoring seven more. He has also advised 14 M.S. students and seven post-doctoral scholars. Professor Dasgupta is actively engaged in many UM undergraduate research programs, including UROP, RISE, ME 450 Senior Design Project, and MI-Lamp, having mentored a combined total of 36 undergraduate students since 2014.

Research: Professor Dasgupta's research lies at the intersection of mechanical engineering and materials science, with applications in a broad range of societally important fields such as energy and manufacturing. He has gained a national reputation specifically for technical achievements on surface and interfacial engineering of beyond-lithium-ion batteries and scalable nano-manufacturing using atomic layer deposition. He has published full articles in prominent

journals, including the *Journal of the Electrochemical Society*, *Advanced Energy Materials*, *Chemistry of Materials*, and *ACS Nano*. Professor Dasgupta's funding sources are just as competitive as the journals in which he has published. His funding sources include the National Science Foundation, Department of Energy, The Electrochemical Society, Proctor & Gamble, Ford Motor Company, and Intel Corp. His research is impactful: his 48 published journal articles have accrued almost 2500 citations (Scopus), for an *h*-index of 24. He is the recipient of many distinctive and prestigious awards, including a DARPA Young Faculty Award, an NSF Career Award, the Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers (SME), and the Air Force Office of Scientific Research (AFOSR) Young Investigator Program (YIP) Award.

Recent and Significant Publications:

- K. H. Chen, A. J. Sanchez, E. Kazyak, A.L. Davis, N. P. Dasgupta, "Synergistic Effect of 3-D Current Collectors and ALD Surface Modification for High Coulombic Efficiency Lithium Metal Anodes," *Advanced Energy Materials*, 9: 1802534, 2019.
- W. S. LePage, Y. Chen, E. Kazyak, K.H. Chen, A. J. Sanchez, A. Poli, E. M. Arruda, M.D. Thouless, N. P. Dasgupta, "Lithium Mechanics: Roles of Strain Rate and Temperature and Implications for Lithium Metal Batteries," *Journal of The Electrochemical Society*, 166(2): A89-A97, 2019.
- A. R. Bielinski, M. Boban, Y. He, E. Kazyak, D. H. Lee, C. Wang, A. Tuteja, N. P. Dasgupta, "Rational Design of Hyperbranched Nanowire Systems for Tunable Superomniphobic Surfaces Enabled by Atomic Layer Deposition," *ACS Nano*, 11: 478-489, 2017.
- K. H. Chen, K.N. Wood, E. Kazyak, W. S. LePage, A.L. Davis, A. J. Sanchez, N. P. Dasgupta, "Dead lithium: mass transport effects on voltage, capacity, and failure of lithium metal anodes," *Journal of Materials Chemistry A*, 5:11671-11684, 2017.
- K. N. Wood, E. Kazyak, A. F. Chadwick, K.H. Chen, J. G. Zhang, K. Thornton, N.P. Dasgupta, "Dendrites and Pits: Untangling the Complex Behavior of Lithium Metal Anodes Through Operando Video Microscopy," *ACS Central Science*, 2: 790-801, 2016.

Service: Professor Dasgupta has an excellent service record within the department, the university, and scientific community. For several years, he has served on the graduate-student admissions committee and the department seminar committee for ME. He has served the College of Engineering as the advisor to the UM Solar car team, and as faculty representative of the Dow Sustainability Fellowship. Professor Dasgupta is passionate about promoting DEI, having traveled as a college representative at the Society of Hispanic Professional Engineering National Meetings in Detroit, Baltimore, Seattle, and Cleveland to recruit underrepresented students to apply to graduate school. He also recruited at the National Society for Black Engineers National Meeting in Detroit in 2019. His K-12 outreach is notable, and he has built a new relationship with a local middle school, developing a hands-on module for 6-8th grade students to build solar cells from blackberry juice. Professor Dasgupta has served his scientific community having completed approximately 100 reviews for leading journals, and received the Reviewer Excellence Award from *Chemistry of Materials*. He has served on several review panels for NSF, DOE, and international agencies. He has served on the organizing committee for the AVS International Conference on Atomic Layer Deposition in from 2014-2019, and then served as conference chair for the AVS – Michigan Chapter Annual Symposium in 2017. Professor Dasgupta has served as an invited guest editor for many top rated journals, including

Advanced Materials Interfaces.

External Reviewers:

Reviewer A: “Neil is a creative scholar [of his cohort] who is a rising star in the field... Neil does not appear to be one who simply publishes a highly cited paper and moves on. Rather he tends to dive deeply in the topic to broaden out the understanding. This type of sustained effort in a research area is what has allowed him to become a leader in the field.”

Reviewer B: “I am highly impressed by his accomplishments across the board, and that he has achieved excellence in every aspect that can be expected of a junior faculty member. ... His accomplishments as a junior faculty member at Michigan can be regarded as a model for his peers, both at Michigan and arguably at any top research university around the world.”

Reviewer C: “He is an outstanding researcher and an excellent mentor in the field of energy storage materials and systems. ... Neil is likely to become one of the key figures in the research field of energy storage.”

Reviewer D: “It is fair to say that he is very highly regarded - by me and others in the field - for his talent and creativity, his objectivity, his strategic planning, and his personal interactions. ... In comparison to his peer group in the ALD, energy storage, and solar cell arenas, I regard Neil at the top.”

Reviewer E: “His published work is both impactful and lasting. ... Outside of his excellent research contributions, Professor Dasgupta is an upstanding teacher...it is clear that Neil enjoys and excels at the pedagogical aspects of his work as well as the research drivers.”

Summary of Recommendation: Professor Dasgupta is a passionate teacher, advisor, and mentor, who is making significant impact with his research. It is with the support of the College of Engineering Executive Committee that I recommend Neil P. Dasgupta for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.



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

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