Approved by the Regents
May 16, 2013

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Pramod Sangi Reddy, assistant professor of mechanical engineering, Department of Mechanical Engineering, and assistant professor of materials science and engineering, Department of Materials Science and Engineering, College of Engineering, is recommended for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, and associate professor of materials science and engineering, without tenure, Department of Materials Science and Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2007	University of California, Applied Science and Technology Program, Berkeley, CA
M.S.	2002	Indian Institute of Technology, Mechanical Engineering, Bombay, India
B.Tech	2002	Indian Institute of Technology, Mechanical Engineering, Bombay, India

Professional Record:

2007 – present	Assistant Professor, Department of Mechanical Engineering, University of Michigan
2011 – present	Assistant Professor, Department of Materials Science and Engineering, University of Michigan

Summary of Evaluation:

Teaching: Since joining Michigan, Professor Sangi Reddy has taught a core undergraduate lab course and a core undergraduate heat transfer class. In addition, he has developed a new graduate class, Introduction to Quantum Mechanics and Solid-State Physics, an important course that brings new ideas and concepts to our graduate curriculum. This course also has attracted undergraduates. It has greatly facilitated our students in transitioning to new Mechanical Engineering (ME) research in nano-scale transport science. In addition, working with his ME and Materials Science and Engineering (MSE) colleagues, Professor Sangi Reddy has recently initiated four novel experimental modules in our senior level lab course that exploit the unique capabilities of atomic force microscopy to resolve nano-scale mechanics and heat transfer. This initiative aligns perfectly with ME's strategic plan to bring new emerging engineering fields into our undergraduate curriculum. Professor Sangi Reddy has graduated one Ph.D. student and is currently supervising an additional five. Student comments indicate that he is an effective teacher and excellent advisor, testifying that he is devoted, creative and knowledgeable. His mentorship is also demonstrated through publications with his graduate students in high quality journals.

Research: Professor Sangi Reddy's Ph.D. thesis was on the study of thermoelectric effects in Metal-Molecule Heterostructures. Since coming to Michigan, he has built upon and expanded from this strong foundation and is developing an excellent reputation in the field of non-equilibrium phenomena at nanoscale related to charge and energy transport; where the potential impact is exceptional. He is performing high-quality scholarly research and has developed a strongly funded program here, winning the prestigious NSF CAREER grant and several other highly competitive grants from DARPA, AFOSR, DoE, and NSF. Being an experimentalist, Professor Sangi Reddy has spent significant time and effort building up his lab and research facilities during his first couple of years and is now receiving very good results for publication. He has authored a total of 15 journal papers (full and short notes), with 10 since joining Michigan. He has been publishing research findings in prestigious and high impact journals in his field, such as *Science*, *Nano Letters*, and *Applied Physics Letters*. His papers are very well cited by other

scholars and researchers. External referees praise his research accomplishments. Professor Sangi Reddy has developed a strong research record with outstanding potential.

Recent and Significant Publications:

Yashar Ganjeh, Bai Song, Krishna Pagadala, Kyeongtae Kim, Seid Sadat, Wonho Jeong, Katsuo Kurabayashi, Edgar Meyhofer and Pramod Reddy, "A Platform to Parallelize Planar Surfaces and Control the Spatial Separation Between them with nanometer resolution," *Review of Scientific Instruments*, (in Press).

Woochul Lee, Bai Song and Pramod Reddy, "Measurement of Thermoelectric and Thermal Transport Properties of Single Molecule Junctions," *Annual Reviews of Heat Transfer*, (in Press).

Seid Sadat, Edgar Meyhofer and Pramod Reddy, "High Resolution Resistive Thermometry for Micro/Nanoscale Measurements," *Review of Scientific Instruments*, 83, 084902 (2012).

Kyeongtae Kim, Wonho Jeong, Woochul Lee and Pramod Reddy, "Ultra-High Vacuum Scanning Thermal Microscopy for Nanometer Resolution Quantitative Thermometry," *ACS Nano*, 6, 4248 (2012).

Janakiraman Balachandran, Pramod Reddy, Barry Dunietz and Vikram Gavini, "End-group Induced Charge Transfer in Molecular Junctions: Effect on Electronic Structure and Thermopower," *Journal of Physical Chemistry Letters*, 3, 1962 (2012).

Woochul Lee and Pramod Reddy, "Creation of Mechanically Stable Molecular Junctions with a Custom-Designed Scanning Tunneling Microscope," *Nanotechnology*, 22, 485703 (2011).

Aaron Tan, Janakiraman Balachandran, Seid Sadat, Vikram Gavini, Barry Dunietz, Sung-Yeon Jang and Pramod Reddy, "Effect of Length and Contact Chemistry on the Electronic Structure and Thermoelectric Properties of Molecular Junctions," *Journal of American Chemical Society*, 133, 8838 (2011).

Seid Sadat, Aaron Tan and Pramod Reddy, "Nanoscale Thermometry Using Point Contact Thermocouples," *Nano Letters*, 10, *2613* (2010).

Kanhayyalal Baheti, Jonathan Malen, Peter Doak, Pramod Reddy, Sung-Yeon Jang, Don Tilley, Arun Majumdar and Rachel Segalman, "Probing the Chemistry of Molecular Heterojunctions using Thermoelectricity," *Nano Letters*, 8, *715* (2008).

Service: Within his department, Professor Sangi Reddy has chaired the departmental seminar committee, and was actively involved in the design process for the FXB Ultra Low Vibration facility, meeting with architects numerous times and going through the architectural drawings and plans in great detail. He has also been actively involved in the design of the new G.G. Brown building addition as a lab working group member and has participated in numerous meetings to design the new ultra low vibration facility, optics core, and the nano-engineering core. Externally, Professor Sangi Reddy has been active in serving the technical community. He is a member of the American Society of Mechanical Engineers (ASME) Nano Engineering for Energy and Sustainment Committee. He has co-organized symposia and conferences in his field, such as the ASME Nanoengineering for Energy and Sustainability Symposium, and was a member of the local organizing committee of the PHONON conference held in Ann Arbor during the summer of 2012. Professor Sangi Reddy has reviewed technical papers for a variety of top scientific journals and has reviewed proposals for NSF and TRW.

External Reviewers:

Reviewer A: "I rank Prof. Reddy at the top of this group because of the creativity, depth, and quality of his scholarship."

Reviewer B: "...Pramod has established a unique area of research and he will continue to make headways. He has chosen a very important topic with tremendous challenges, and has made impressive progress."

Reviewer C: "Pramod's research record is distinguished by his identification of fundamental problems involving nanoscale thermal metrology and related molecular transport phenomena."

Reviewer D: "In my opinion, the state of the art of these experimental techniques currently resides in his lab."

Reviewer E: "Overall, I consider him one of the best and most outstanding [junior] researchers in the field with a great leadership potential."

Summary of Recommendation: In summary, Professor Sangi Reddy is a great asset to Michigan. He is an effective teacher and excellent advisor. He has built a strong research program at Michigan with outstanding potential, and has been publishing high-quality papers in high-impact journals. Professor Sangi Reddy has been a good citizen in serving the university, the college, his department and the technical community. It is with the support of the College of Engineering Executive Committee that I recommend Pramod Sangi Reddy for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, and associate professor of materials science and engineering, Department of Materials Science and Engineering, College of Engineering.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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