Approved by the Regents May 15, 2014

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

Samantha H. Daly, 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	California Institute of Technology, Mechanical Engineering, Pasadena, CA
M.S.	2002	California Institute of Technology, Mechanical Engineering, Pasadena, CA
B.E.	2001	Dartmouth College, Mechanical Engineering modified with Mathematics, Hanover, NH
B.A.	2001	Dartmouth College, Mechanical Engineering, Hanover, NH

Professional Record:

2010 – present	Assistant Professor, Department of Materials Science and Engineering, University of Michigan
2008 – present	Assistant Professor, Department of Mechanical Engineering, University of Michigan
2007	Visiting Research Associate, Department of Mechanical Engineering, University of Michigan
2007	Post-Doctoral Research Associate, California Institute of Technology, Pasadena, CA

Summary of Evaluation:

Teaching: Professor Daly has demonstrated that she is an excellent teacher and advisor. She has taught a core junior level course, ME382 (Mechanical Behavior of Materials), and two graduate courses, ME511 and ME519. In addition, she has developed a new graduate class in experimental methods in solids, which is an important class for ME graduate students. Her Q1/Q2 student evaluations are consistently high; many of them over 4.5. It is especially impressive for her to have received very high scores (highest Q2=4.96) in ME382, a course with large enrollment. The students' comments show that Professor Daly is an effective, caring and helpful teacher. Professor Daly has advised two Ph.D. students to graduation and she is currently advising eight more. Students refer to her as an excellent mentor and an inspiration to them. Her mentorship is also demonstrated through the publications with her graduate students in high quality journals.

Research: Professor Daly's research is in experimental mechanics for the characterization, design, and development of new materials, classified into the areas of functional materials, materials for demanding environments, and novel methods for small-scale characterization. Professor Daly is performing high quality scholarly work and has built a strong research program at Michigan. She has secured external funding from a good mix of government agencies and private companies, such as the National Science Foundation (NSF), the Air Force Office of Scientific Research (AFOSR), Office of Naval Research, Department of Energy (DoE), General Motors and General Electric. She has been publishing her research findings in high quality and high impact journals in her field. Her papers are well cited and praised by her peers. Professor Daly has given invited talks in various departmental seminars and symposia at top

research institutions. Her research accomplishments have been recognized with prestigious awards including the NSF CAREER Award, the AFOSR Young Investigator Award, the DoE Early Career Award, the ASME Orr Award for Early Career Excellence, and the Society of Experimental Mechanics M. Hetényi Award. External reviewers praise the quality, scholarship and impact of her work and consider her a rising star and leader in her field.

Recent and Significant Publications:

B. Reedlunn, S. Daly and J. Shaw, "Superelastic Shape Memory Alloy Cables: Part II – Isothermal Subcomponent Responses," *International Journal of Solids and Structures*, Accepted, 2013.

M. Kimiecik, J. W. Jones and S. Daly, "A New Methodology for Tracking Phase Transformation in SMAs at the Microstructural Length Scale," *Materials Letters,* 95: 25-29, 2013.

B. Reedlunn, S. Daly and J. Shaw, "Superelastic Shape Memory Alloy Cables: Part I – Isothermal Tension Experiments," *International Journal of Solids and Structures*, Accepted, 2013.

B. Reedlunn, S. Daly, L. Hector, P. Zavattieri and J. Shaw, "Tips & Tricks for Characterizing Shape Memory Wire Part 5: Full-field Strain Measurement by Digital Image Correlation," *Experimental Techniques,* 37(3): 62-78, 2013.

A. Kammers and S. Daly, "Small-Scale Patterning Methods for Digital Image Correlation Under Scanning Electron Microscopy," *Measurement Science and Technology,* 22(12) 125501, 2012.

K. Kim and S. Daly, "Martensite Strain Memory in the Shape Memory Alloy NiTi under Mechanical Cycling," Invited publication: *Experimental Mechanics*, 51(4): 641-652, 2011.

S. Desindes and S. Daly, "The Small-Scale Yielding of Shape Memory Alloys under Mode III Fracture," *International Journal of Solids and Structures*, 47(5): 730-737, 2010.

Service: Within the department, Professor Daly is a good citizen; she has been a member of the department's Graduate Admission Committee and Strategic Planning Panel, chaired the Seminar Committee and Junior Faculty Mentoring Luncheon, and is currently serving on the department's Honors and Awards Committee. At the college level, Professor Daly is a member of the Advisory Committee for the Electron Microbeam Analysis Laboratory. Externally, Professor Daly is serving as chair of the Fatigue and Fracture Division in the Society of Experimental Mechanics, and has been an active organizer for various technical symposia in her field.

External Reviewers:

Reviewer A: "She has proven to be a creative and dedicated scholar with unique contributions to the field and her work holds great promise for the future…I believe she would easily be tenured here at [my institution] with this record."

Reviewer B: "Overall, her research is characterized by high quality measurements and thorough descriptions of her observations. She impresses me as one who is a true scholar."

Reviewer C: "Sam Daly is indeed unusually strong, and I am sure she will be a leading figure in the mechanics of materials….. Samantha Daly can be considered the very top person of her generation in experimental mechanics of materials. She has broad interests that extend to fundamental problems in materials science, and also to theory of materials. She is exceptionally collaborative, and moving up very fast. I have not the slightest doubt that she will be a sustained world leader in her field."

Reviewer D: "In my opinion, Prof. Daly has established herself as the most innovative and meticulous researcher in the area of mechanical behavior of materials. She and her group have performed groundbreaking work on shape memory alloys…She has established an international reputation in her field."

Reviewer E: "...it is clear that she is a 'rising star' in experimental solid mechanics...The quality of the results is really good and it is clear that Dr. Daly is already gathering international recognition for this work as seen in the Esteem section. My own perception of Dr. Daly's work summons the words 'high quality,' 'rigorous' and 'novel.'"

Reviewer F: "This means that Sam's work is likely to lead to a rather basic re-think of how we perform crystal plasticity simulations...I was very strongly impressed by what she is doing."

Reviewer G: "She is undoubtedly one of the excellent experimental solid mechanics researchers worldwide in her research area...I consider Dr. Daly well qualified for being promoted to associate professor with tenure. I would like to rank Dr. Daly among the top 3~5% of peers at similar career stage and in the same field of my research."

Summary of Recommendation: Professor Daly is a great asset to the University of Michigan. She has been recognized as an emerging leader and top researcher in her field, an effective teacher and excellent advisor, and a great citizen in service. It is with the support of the College of Engineering Executive Committee that I recommend Samantha H. Daly 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.

David C. Munson Jr.

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

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