Approved by the Regents
May 18, 2017

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Aerospace Engineering
Department of Materials Science and Engineering
Macromolecular Science and Engineering Program

Henry Sodano, associate professor of aerospace engineering, with tenure, Department of Aerospace Engineering, associate professor of materials science and engineering, without tenure, Department of Materials Science and Engineering, and associate professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, is recommended for promotion to professor of aerospace engineering, with tenure, Department of Aerospace Engineering, professor of materials science and engineering, without tenure, Department of Materials Science and Engineering, and professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering.

Academic Degrees:

Ph.D.	2005	Virginia Polytechnic Institute and State University, Mechanical Engineering, Blacksburg, VA.
M.S.	2003	Virginia Polytechnic Institute and State University, Mechanical Engineering, Blacksburg, VA.
B.S.	2002	Virginia Polytechnic Institute and State University, Mechanical Engineering, Blacksburg, VA.

Professional Record:

2016 – present	Associate Professor (without tenure), Macromolecular Science and Engineering Program, University of Michigan
2015 – present	Associate Professor (with tenure), Department of Aerospace Engineering, University of Michigan
2015 – present	Associate Professor (without tenure), Department of Material Science, University of Michigan
2015 – 2015	Professor (with tenure), Departments of Mechanical and Aerospace Engineering and Materials Science and Engineering, University of Florida, Gainesville, FL.
2011 – 2015	Associate Professor (with tenure), Departments of Mechanical and Aerospace Engineering and Materials Science and Engineering, University of Florida, Gainesville, FL.
2010 – 2010	Associate Professor (with tenure), Departments of Mechanical and Aerospace Engineering, Arizona State University, Tempe, AZ.
2007 – 2010	Assistant Professor, Departments of Mechanical and Aerospace Engineering, Arizona State University, Tempe, AZ.
2005 – 2007	Assistant Professor, Department of Mechanical Engineering – Engineering Mechanics, Michigan Technological University, Houghton, MI
2005 – 2005	Research Scientist, Center for Intelligent Material Systems and Structures, Virginia Tech, Blacksburg, VA.

Summary of Evaluation:

Teaching: Professor Sodano is committed to educating students. His record of classroom teaching at his previous universities is strong and broad in the number of subjects taught and the variety of educational levels (lower-level undergraduate service courses through graduate courses). At Michigan, he has received good student evaluations for the graduate course AE 516, which he redesigned to leverage his research expertise in composites fabrication and introduce a hands-on laboratory component. Letters from past and current undergraduate and graduate students uniformly praise his effectiveness as a classroom teacher and as a research mentor. It is clear that he has had a positive and lasting impact on student careers. He has graduated ten Ph.D. students with eight more (one at UF and seven at UM) currently in the pipeline. He has also graduated six M.S. students (at other universities). In addition, he has offered an impressive number of independent research projects (three currently at Michigan) for undergraduate students, which underscores his commitment to education.

Research: Professor Sodano pursues research at the intersection of chemistry, structural mechanics, and electro-active properties. He has gained an international reputation as a leader in creating novel multi-functional composite materials for energy harvesting, improved interface properties, sensing and that are self-healing. His scholarly output has been excellent with over 90 archival journal articles published, over 30 refereed conference papers, and five book chapters. This is particularly impressive when recognizing that his journal articles are well-cited and published almost exclusively in highly reputed and upper-echelon journals. The number of invited lectures he has given at peer universities, industry, national laboratories and international conferences, and the numerous awards and honors from ASME (American Society of Mechanical Engineers) and AIAA (American Institute of Aeronautics and Astronautics) are further testimony to the impact and visibility of his research. He has a strong track record of sustained funding, totaling more than $5M.

Recent and Significant Publications:

Malakooti, M.H., Patterson, B.A., Hwang, H.S. and Sodano, H.A., 2016, "ZnO nanowire interfaces for high strength multifunctional composites with embedded energy harvesting," *Energy & Environmental Science*, 9(2), pp.634-643.

Zhou, Z., Tang, H. and Sodano, H.A., 2014, "Scalable synthesis of morphotropic phase boundary lead zirconium titanate nanowires for energy harvesting," *Advanced Materials*, 26(45), pp.7547-7554.

Koka, A. and Sodano, H.A., 2013, "High-sensitivity accelerometer composed of ultra-long vertically aligned barium titanate nanowire arrays," *Nature communications*, 4.

Tang, H. and Sodano, H.A., 2013, "Ultra high energy density nanocomposite capacitors with fast discharge using Ba0. 2Sr0. 8TiO3 nanowires," *Nano letters*, 13(4), pp.1373-1379.

Lin, Y., Ehlert, G. and Sodano, H.A., 2009, "Increased interface strength in carbon fiber composites through a ZnO nanowire interphase," *Advanced functional materials*, 19(16), pp.2654-2660.

Service: Professor Sodano's service contributions exceed by far the norm for a faculty member at his current rank. His external professional activities are extensive, being active in and chairing several committees and symposia in ASME and AIAA, serving as associate editor on three journals, reviewing about 20 papers annually and serving on numerous NSF proposal review panels. He currently serves on the Aerospace Engineering department's faculty search committee.

External Reviewers:

Reviewer A: "He is certainly one of the rising stars in the field and I cannot think of anyone comparable at this stage of his career."

Reviewer B: "…many researchers who have argued that their functional nanowires could be used in composite systems, but perhaps no one else to date other than Prof. Sodano has actually succeeded in integrating piezoelectric nanowires into hierarchical macroscale composites that are scalable and functional."

Reviewer C: "Dr. Sodano stands near the top of his field in terms of the quality of his research, his productivity, and his ability to obtain a diverse range of support for his research activities."

Reviewer D: "Prof. Sodano is one of the stars that is truly leading this community. …The depth and breadth of his work are phenomenal, encompassing nanoscale materials modeling and processing, micromechanics and design of composite microstructures, multiscale material characterization, macroscale mechanics and modeling, vibration and controls, and electronics."

Reviewer E: "I strongly recommend Henry SODANO for promotion from the rank of Associate Professor with tenure to the rank of Professor with tenure in the College of Engineering / University of Michigan."

Reviewer F: "Over the course of his academic career, Henry has emerged as a leader and innovator in the area of smart materials. …I am confident that Henry would be promoted to the rank of Full Professor at [my institution]."

Reviewer G: "He is an outstanding researcher who is pioneering new research pathways in multifunctional materials for engineering applications."

Reviewer H: "Dr. Sodano is considered by many (including myself) to be one of the superstars in the field of aerospace engineering, especially in the field of smart structures and materials, and he is arguably the best researcher in the country at his career point in his field."

Summary of Recommendation: Professor Sodano is a very prominent and highly regarded researcher. He is a caring and engaged educator and teacher. His service to his institution and profession are exemplary. He is considered a leader in the field of smart materials and structures by senior researchers across the world. It is with the support of the College of Engineering Executive Committee that I recommend Henry Sodano for promotion to professor of aerospace engineering, with tenure, Department of Aerospace Engineering, professor of materials science and engineering, without tenure, Department of Materials Science and Engineering, without tenure, and professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering.

_____

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

May 2017