

PROMOTION RECOMMENDATION  
THE UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL AND COLLEGE OF ENGINEERING  
DEPARTMENT OF BIOMEDICAL ENGINEERING  
MEDICAL SCHOOL  
DEPARTMENT OF RADIOLOGY

Xueding Wang, Ph.D., associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School, and associate professor of radiology, without tenure, Department of Radiology, Medical School, is recommended for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School, and professor of radiology, without tenure, Department of Radiology, Medical School.

Academic Degrees:

Ph.D.	2004	Texas A & M
M.S.	2000	Nanjing University, China
B.S.	1997	Nanjing University, China

Professional Record:

2015-present	Associate Professor of Biomedical Engineering (with tenure), University of Michigan
2015-present	Associate Professor of Radiology (without tenure), University of Michigan
2012-2014	Associate Professor of Radiology (with tenure), University of Michigan
2012-2014	Associate Professor of Biomedical Engineering (without tenure), University of Michigan
2009-2012	Assistant Professor of Biomedical Engineering, University of Michigan
2008-2012	Assistant Professor of Radiology, University of Michigan
2007-2008	Research Assistant Professor, Department of Radiology, University of Michigan
2005-2007	Research Investigator, Department of Radiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Wang has trained eight post-doctoral research fellows, eleven Ph.D. students, and fifteen visiting professors and scholars to date. Among the eight post-doctoral fellows, seven have finished training. Four of them obtained faculty positions and stayed in academia. Since 2015, Dr. Wang has served as thesis committee chair or co-chair for three Ph.D. students. One student, Chang Lee, is close to graduation (defense by winter of 2018), and has several papers published or accepted, including one in *Nature Communication* (first author), one in *Analytical Chemistry* (first author), and one in *Science Translational Medicine* (second author). Another Ph.D. student joined Dr. Wang's group in the Fall of 2017. Dr. Wang has also contributed to the mentoring of junior faculty. He has been working as the mentor for Dr. Guan Xu who is now a research assistant professor of Radiology. Dr. Wang has also been working as the technical mentor for Dr. Yannis

Paulus, an assistant professor in the Department of Ophthalmology and Visual Sciences, and served in Dr. Paulus' Launching Committee in 2015-2016.

Research: Dr. Wang's research is primarily focused on novel biomedical imaging and therapy technologies, especially those involving light and ultrasound. He has extensive experience in system development, laser-tissue interactions, ultrasound tissue characterization, and adaptation of novel technologies to preclinical and clinical settings. At the University of Michigan, a major part of his research focuses on the development of photoacoustic imaging, a novel laser-induced ultrasound imaging technology, and its clinical applications in inflammatory arthritis, cancer, inflammatory bowel disease, and eye diseases. He also investigates molecular level diagnostic and novel therapeutics facilitated by functional probes and contrast agents. In addition to working on animal models, he has launched two clinical studies on patients, including those affected by inflammatory arthritis and breast cancer. Through collaborations, he has also invented a new therapeutic technology named photo-mediated ultrasound therapy. This technology is being developed into a new tool to treat neoangiogenesis-associated eye diseases such as wet age-related macular degeneration, and diabetic retinopathy.

Dr. Wang's research program is well-funded with several active NIH grants supporting his research. Dr. Wang has published 96 peer-reviewed journal papers up to now. Since being promoted to associate professor in 2012, he has published 58 peer-reviewed journal papers, including one in *ACS Nano* (impact factor 13.334), one in *Nature Communication* (impact factor 12.124), one in *Radiology* (impact factor 6.867), one in *Advanced Science* (impact factor: 6.0), one in *Analytical Chemistry* (impact factor: 5.636), four in *Nature Scientific Reports* (impact factor: 5.228), and many in main-stream journals such as *Optics Letters*, *Optics Express*, *Biomedical Optics Express*, *PLoS one*, and *IEEE T UFFC*. His research has been recognized by his peers through the Distinguished Investigator Award from the Academy of Radiology Research.

#### Recent and Significant Publications:

Wang X, Pang Y, Ku G, Xie X, Stoica G, Wang LV: Non-invasive laser-induced photoacoustic tomography for structural and functional in vivo imaging of the brain. *Nature Biotechnology* 21:803–806, 2003.

Shao X, Zhang H, Rajian J, Chamberland D, Sherman P, Quesada C, Koch A, Kotov N, Wang X: 125I-labeled gold nanorods for targeted imaging of inflammation. *ACS Nano* 5:8967-8973, 2011.

Xu G, Meng Z-X, Lin JD, Yuan J, Carson P, Joshi B, Wang X: Functional pitch of an organ: Quantification of tissue texture with photoacoustic spectrum analysis. *Radiology* 271:248-254.

Xu G, Meng Z. Lin J, Deng CX, Carson PL, Fowlkes JB, Wang X: High resolution physio-chemical tissue analysis: toward non-invasive in vivo biopsy. *Scientific Reports* 6:16937, 2016.

Hu Z, Zhang H, Mordovanakis A, Paulus Y, Liu Q, Wang X, Yang X: High-precision, non-invasive anti-microvascular approach via concurrent ultrasound and laser irradiation. *Scientific Reports* 7:40241, 2017.

Service: Dr. Wang has made significant contributions to the department services, including serving on the Graduate Admission Committee in 2015-2016, the Graduate Education Committee (imaging concentration) in 2016-2017, and the Executive Committee in 2016-2017. He chaired the Faculty Search Committee of Biomedical Engineering (BME) for this past academic year. In addition, before joining BME, Dr. Wang had organized radiology's monthly Research Seminar Series from 2007 to 2014. Dr. Wang's extensive professional service includes regular participation on NIH review panels related to imaging and small business grants. He is an associate editor for the several journals including *Medical Physics*, *Photoacoustics*, and *Ultrasonic Imaging* and is an editorial board member for the *Journal of Biomedical Optics*.

External Reviewers:

Reviewer A: "He has made numerous fundamental contributions to the field of photoacoustic imaging. His recent contributions can be broadly characterized as (1) development of innovative system designs....(2) development and application of contrast agents for functional photoacoustic imaging...(3) investigation of photoacoustic imaging for detecting arthritis....His accomplishments in each of these areas have been very substantial, resulting in numerous publications in leading peer-reviewed journals, and have had a large impact on the field of photoacoustic imaging."

Reviewer B: "Dr. Wang has established himself as an expert and, more importantly, a leader in biophotonics and biomedical imaging with particular emphasis on development and application of imaging technologies involving light and ultrasound."

Reviewer C: "...Xueding is an internationally recognized expert in the area of photoacoustics imaging, and has made significant contributions to the field. He has successfully developed a leading-edge research program, and his research has been seen as broad and topical in content and significant in impact. He has been a highly dedicated citizen to the scientific community."

Reviewer D: "...there is no doubt that Xueding is one of the leading researchers and has contributed tremendously to the development of biomedical optoacoustics. His remarkable contribution to medical ultrasound and biophotonics especially photoacoustic imaging up to now is a solid evidence of his high standing in relation to others in the same fields."

Reviewer E: "Dr. Wang is known in our discipline as an outstanding researcher and innovator in the development of new and exciting biomedical optics technologies for biological applications with a focus on photoacoustic imaging....He creatively applies existing knowledge to new problems and is unusually adept at communicating his ideas and collaborating with appropriate experts on projects of strategic importance in biological and biomedical questions....I consider Dr. Wang's capability in assembling competitive interdisciplinary teams a very encouraging indicator of his leadership and continued success."

Summary of Recommendation:

Dr. Wang is internationally recognized for his work with light and ultrasound based imaging. He is a valuable member of the biomedical research community due to his cutting edge research, his mentorship within and outside the department, and his ability to translate his work from the bench to the bedside. We are pleased to recommend Xueding Wang, Ph.D. for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School, and professor of radiology, without tenure, Department of Radiology, Medical School.



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Marschall S. Runge, M.D., Ph.D.  
Executive Vice President for Medical Affairs  
Dean, Medical School



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

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