

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Xudong (Sherman) Fan, associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, College of Engineering, is recommended for the granting of tenure to be held with his title of associate professor of biomedical engineering, Department of Biomedical Engineering, College of Engineering.

Academic Degrees:

Ph.D. 2001 University of Oregon, Physics/Optics, Eugene, OR
M.S. 1994 Peking University, Physics, Beijing, P.R. China
B.S. 1991 Peking University, Physics, Beijing, P.R. China

Professional Record:

2010 – present Associate Professor (without tenure), Department of Biomedical Engineering,
University of Michigan
2009 Associate Professor (with tenure), Department of Biological Engineering, University
of Missouri, Columbia, MO
2004 – 2009 Assistant professor, Department of Biological Engineering, University of Missouri,
Columbia, MO
2000 – 2004 Senior Research Scientist, Project Leader, Corporate Research Laboratory, 3M
Corporation, Austin, TX

Summary of Evaluation:

Teaching: Professor Fan's teaching record is outstanding. He moved from the University of Missouri in January 2010 and has taught four semesters since arriving at Michigan. He developed significant new lecture and laboratory materials for a critical required course, BME 458 (Bioinstrumentation). His teaching evaluations have been excellent, with the average Q1 of 4.24, and Q2 of 4.23 (both out of 5) and uniformly positive student letters. He spearheaded an innovative biomedical instrument design activity that resulted in an invited presentation to a national conference that served to showcase engineering education at Michigan.

Professor Fan's record as a graduate advisor is also outstanding. He currently mentors four doctoral students, two post-doctoral fellows, and two UROP students. He has graduated three doctoral students. His graduate students and post-docs have an excellent record of productivity, as evidenced by 18 of 19 peer-reviewed papers published in 2010 and 2011 having at least one student or post-doc as a lead or co-author. The graduates from his group have gone on to appropriate professional positions in academia and industry. His students have uniformly praised his teaching and mentoring abilities. He received the Sigma Xi Excellence in Graduate Research Mentoring Award in 2009 from the University of Missouri.

Research: Professor Fan has established himself as an outstanding scholar in the field of photonic biosensors. He has emerged as a multidisciplinary researcher with a gifted ability to integrate the discovery of novel scientific principles with translational innovation that can impact the biomedical field. Professor Fan and his students have published 60 research papers in the last six years. These publications are of the highest standard, including publications in leading journals such as *Nature Photonics*, *Lab on a Chip*, *Optics Express* and *Applied Physics Letters*. Professor Fan edited a new book in the field of

photonic biosensors by working with several leading researchers in this field. He has also recently published a review article in the top journal, *Nature Photonics*. Professor Fan is an associate editor of a flagship journal in the area of optics and photonic technology, *Optics Express*. He received the IEEE Sensors Journal Best Paper Award in 2008. He has also been issued 11 U.S. and international patents. All these are strong evidence of Professor Fan's excellent scholastic achievement and professional dedication.

Professor Fan's national and international reputation is indicated by the numerous invited presentations that he has given over the last five years at major conferences and universities in the U.S., Europe, and China. He has also secured a significant amount of external funding for his research program. He received the prestigious NSF CAREER award. He has also been recognized with major awards including the Wallace H. Coulter Foundation Early Career Award in Translational Research, and the 3M Non-Tenured Faculty Award.

Recent and Significant Publications:

Karthik Reddy, Yunbo Guo, Jing Liu, Wonsuk Lee, Maung Kyaw Khaing Oo, and Xudong Fan, "On-chip Fabry-Pérot interferometric sensors for micro-gas chromatography detection," *Sensors and Actuators B*, 159(1), 60-65 (DOI: 10.1016/j.snb.2011.06.041) (2011)

Yuze Sun, Siyka I. Shopova, Chung-Shieh Wu, Stephen Arnold, and Xudong Fan, "Bioinspired optofluidic FRET lasers via DNA scaffolds," *Proceedings of the National Academy of Sciences*, 107, 16039-16042 (2010)

Hongying Zhu, Paul S. Dale, Charles W. Caldwell, and Xudong Fan, "Rapid, label-free detection of breast cancer biomarker CA15-3 in clinical human serum samples with opto-fluidic ring resonator sensors," *Analytical Chemistry*, 81, 9858-9865 (2009)

Jonathan D. Suter, Huidong Shi, Charles W. Caldwell, and Xudong Fan, "Label-free DNA methylation analysis using opto-fluidic ring resonators," *Biosensors and Bioelectronics*, 26, 1016-1020 (2010)

Yuze Sun and Xudong Fan, "Optical ring resonators for biochemical and chemical sensing," *Analytical and Bioanalytical Chemistry*, 399, 205-211 (2011)

Service: Professor Fan's contributions to the Department of Biomedical Engineering and University include service on the graduate admission committee, department curriculum committee, bioelectrical concentration advisory committee, College international programs committee, and marshal for commencement. Professor Fan has also contributed significantly to the diversity and climate of the University. He has mentored six undergraduate female students and five female graduate students over his career. Professor Fan's professional service to his discipline is significant and well-regarded. As mentioned previously, he is the associate editor for *Optics Express* and also regularly helps organize the SPIE conferences as well as periodically for the Optical Society of America and Materials Research Society. Professor Fan has also served regularly on NSF review panels and ad hoc review panels for NIH and other organizations.

External Reviewers:

Reviewer A: "He has published 50 research papers in the field in the last 5 years. At their best, their quality is of the highest standard...Xudong Fan will go on to become a real asset for your Faculty. I therefore strongly support his promotion."

Reviewer B: "...Prof. Fan has clearly demonstrated strong accomplishments and potential to continue building on those accomplishments that, in my opinion, merit promotion to Full Professor...I have found Prof. Fan to be an amiable, open, and supportive colleague in my own personal interactions with him, and I believe that he would be a strong contributor to his department. It is my pleasure to give him my highest recommendation."

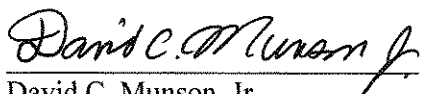
Reviewer C: "...Dr. Fan has published an exceptional number of high-quality papers in the field, which have been published in top journals in the fields of optics, chemistry, and sensors. His work on optofluidic ring-resonator sensors and lasers is particularly noteworthy this is a very innovative piece of work, the successful completion of which required expertise in many different fields...In a few years, he has managed to build an impressive record of scholarship, to attract very significant funding, and to establish himself as a star."

Reviewer D: "Prof. Fan is a talented and multidisciplinary researcher with a gifted ability to integrate the discovery of novel fundamental insight with translational innovation. He has had a highly productive career as an Assistant/Associate Professor and has become an internationally-recognized investigator across several disciplines...Prof. Fan's accomplishments rank him among the top tier of researchers at the same point in their careers...Prof. Fan's record demonstrates his well-rounded and immense success in research, teaching, and service, and his accomplishments are clearly deserving of tenure at the University of Michigan as well as other major research universities."

Reviewer E: "...Professor Fan is a researcher of tremendous ability and potential, and that he is without doubt a most qualified candidate for a tenured professorship at a top research university in the United States.... Professor Fan definitely belongs to this elite league [cohort of] researchers in optofluidics and biophotonics. I think U. Michigan was very fortunate to have allured him from University of Missouri. I believe he can get tenure in any top-10 engineering schools in the United States..."

Reviewer F: "Sherman is extremely productive and has had a high impact on the field of label-free sensing...[he] has established himself as one of the foremost authorities on biological and chemical sensing...I highly recommend Sherman Fan for promotion to Associate Professor with tenure...In my view, Sherman will continue to be a powerhouse in the field of optical sensors, and will surely rise to the highest levels in his field."

Summary of Recommendation: Professor Fan has established himself as an outstanding scholar in the field of photonic biosensors. He is also a dedicated teacher and mentor. Since arriving at Michigan, he has been an active member in service to his department, the College and the University. It is with the support of the College of Engineering Executive Committee that I recommend Xudong (Sherman) Fan for the granting of tenure in his title as associate professor of biomedical engineering, Department of Biomedical Engineering, College of Engineering.



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

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