Approved by the Regents May 15, 2014

PROMOTION RECOMMENDATION
University of Michigan
College of Engineering
Department of Biomedical Engineering

Xudong (Sherman) Fan, associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School, is recommended for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School.

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:

2009-present	Associate Professor (with tenure), Department of Biomedical Engineering, University of Michigan
2005-2009	Adjunct Professor, Department of Physics, University of Missouri, Columbia, MO
2004-2009	Assistant Professor, Department of Biological Engineering, University of Missouri, Columbia, MO
2000-2004	Senior Research Scientist, Corporate Research Laboratory, 3M Corporation, Austin, TX

Summary of Evaluation:

Teaching: Professor Fan has made noteworthy contributions to teaching and advising at Michigan. He has taught two different undergraduate Biomedical Engineering (BME) courses and one graduate BME course. Letters from graduate and undergraduate students in his classes consistently describe Professor Fan as being approachable and very willing to spend time individually with students to enhance their learning and as an excellent instructor. His graduate students praise his advising and mentorship. Professor Fan has graduated eight Ph.D. students and is currently advising an additional four. He also currently advises or has advised a number of undergraduate students.

Research: Professor Fan's research is focused on advancing the emerging field of optofluidics, which entails synergistic integration and implementation of biophotonics and micro/nano-fluidics. He has made important and impactful intellectual contributions to his research field and is recognized as one of the leaders in his research community. Professor Fan's group has developed state-of-the-art sensing devices and instruments for disease diagnostics, bio/chemical molecule detection and analysis, and microfluidic lasers. He has shown outstanding productivity and creativity in his research, which has been consistently published in high impact journals and has been widely cited. He has published over 95 papers in archival journals and has established nationally and internationally recognized visibility in his field. Professor Fan is ranked at the top of his peer group by experts in his field because of the originality, technical relevance, creativity, depth, and quality of his scholarship. He has repeatedly demonstrated the ability to develop innovative research projects with excellent support through external funding. External reviewers point out the promise of Professor Fan's research and his capability of expanding his research to enable a wide variety of future applications.

Recent and Significant Publications:

Xudong Fan and Seok-Hyun Yun, "Optofluidic Bio-Lasers: Concept and Applications," *Nature Methods*, accepted.

Qiushu Chen, Xingwang Zhang, Yuze Sun, Michael Ritt, Sivaraj Sivaramakrishnan and Xudong Fan, "Highly sensitive fluorescent protein FRET detection using optofluidic lasers," *Lab on a Chip*, 13, pp. 2679-2681, 2013.

Karthik Reddy, Yunbo Guo, Jing Liu, Wonsuk Lee, Maung Kyaw Khaing Oo and Xudong Fan, "Rapid, sensitive, and multiplexed on-chip optical sensors for micro-gas chromatography," *Lab on a Chip*, 12, pp. 901-905, 2012.

Jing Liu, Maung Kyaw Khaing Oo, Karthik Reddy, Yogesh B. Gianchandani, Jack C. Schultz, Heidi M. Appel and Xudong Fan, "Adaptive two-dimensional microgas chromatography," *Analytical Chemistry*, 84, pp. 4214-4220 (2012).

Yuze Sun and Xudong Fan, "Distinguishing DNA by Analog-to-Digital-like Conversion by Using Optofluidic Lasers," *Angewandte Chemie International Edition*, 51, pp. 1236-1239, 2012.

Yuze Sun, Siyka I. Shopova, Chung-Shieh Wu, Stephen Arnold and Xudong Fan, "Bioinspired ptofluidic FRET lasers via DNA scaffolds," *Proceedings of the National Academy of Sciences*, 107, 16039-16042, 2010. (This paper was highlighted by *Nature Photonics*, 4, pp. 732, 2010.)

Service: Professor Fan is active in service activities. His involvement has included, among others, membership on the BME Graduate Student Admission Committee, the BME Curriculum Committee, and the Microfluidics Training Program Committee. His professional service to his discipline is significant and well-regarded. He serves as an associate editor for the scholarly journal *Optics Express.* He is a reviewer for several journals in his field. Professor Fan also has served regularly on grant review panels, including the NIH, NSF, U.S. Army, and the MacArthur Foundation. In addition, Professor Fan has been involved as an organizer or session chair for a number of symposia and conferences.

External Reviewers:

Reviewer A: "Dr. Fan's accomplishments to date show that he has a good and well-funded technology-based research program, does a good job mentoring both graduate and undergraduate students, and has a very good record of external and internal service."

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. It is my pleasure to give him my highest recommendation."

Reviewer C: "Dr. Fan is clearly a leading researcher in his field...I have a high respect for the quality and innovation demonstrated in his research accomplishments. He is more than qualified for promotion to Full Professor at *any* leading institution."

Reviewer D: "...I would definitely recommend Dr. Fan to be promoted at the University of Michigan. His record is very strong in every aspect expected from a faculty member at a major research university...I believe Dr. Fan will be a major figure in the biophotonics community for many years to come and see only continued success."

Reviewer E: "Everything I know of Prof. Fan suggests that he is a superstar in academia...His performance as an engineering professor has been spectacular...In my opinion, Prof. Fan is a high-energy, brilliant scholar and educator that the United States needs to carry on and advance science and engineering to the next level."

Reviewer E: "Xudong is one of the sharpest and most capable optical experimental researchers at our current career stage. He is at the forefront of his particular research field on using novel optical techniques for biosensing applications…I believe promoting him at this point in time is the right and appropriate thing to do."

Summary of Recommendation: Professor Fan is a very prominent and very productive biomedical engineer who has made significant contributions to the field of biomedical engineering. He is an excellent teacher and mentor; and he is a leader who contributes both in external and internal service. It is with the support of the College of Engineering Executive Committee that I recommend Xudong (Sherman) Fan for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School.

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

James O. Woolliscroft, M.D.
Dean, Medical School

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