PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Clark T.C. Nguyen, associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering, is recommended for promotion to professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

Academic Degrees

B.S.	1988	University of California, Berkeley, Electrical Engineering and Computer Sciences
M.S.	1991	University of California, Berkeley, Electrical Engineering and Computer Sciences
Ph.D.	1994	University of California, Berkeley, Electrical Engineering

Professional Record

2002-present	Program Manager, Defense Advanced Research Projects Agency (DARPA)
2001-2002	Vice President and Chief Technology Officer, Discera, Inc.
1995-present	Associate Professor of Electrical Engineering and Computer Science, University of Michigan

Summary of Evaluation:

Teaching: Professor Clark Nguyen is an excellent teacher who has made outstanding contributions to the circuits and microsystem curricula development in EECS department. His teaching records indicate that he is one of the best teachers in EECS department. And the students' comments are mostly positive: "well organized lectures," "clear and thorough," "takes teaching seriously and really wants the students to learn." For his outstanding teaching he was awarded in 2000 "Ruth and Joel Spira Teaching Award." More recently he is applying his excellent teaching skills at DARPA where ...those who don't necessarily want to learn anything new must be taught.... It is perhaps beyond the classroom where the real teaching challenge begins!

Research: The research record is outstanding: Professor Nguyen has more than 30 papers published or submitted (including refereed conference proceedings), since his last promotion. Over the last several years Professor Nguyen and his group have had many "firsts" in resonator-based RF MEMS, such the first parallel and series bandpass microresonator filters, the first lateral bulk-acoustic resonator (so called "Michigan" disk), the first MEMS resonator over 2 GHz (the wineglass-mode resonator), the first resonator using an acoustic mismatch to achieve better energy confinement (the poly-diamond anchored disk resonator), and most recently the demonstration of large arrays of corner-coupled resonators. For his work he won six best paper awards from various international conferences, including two from IEDM and several of his papers are classics, including Wong (JMEMS '04), Wang (JMEMS '00), and Nguyen (Proc. IEEE'98). To acknowledge his outstanding research in 2001 University of Michigan give him "Henry Russel Award."

Recent and Significant Publications:

Y.-W. Lin, S. Lee, S.-S. Li, Y. Xie, Z. Ren, C. T.-C. Nguyen, "Series-resonant VHF micromechanical resonator reference oscillators," *IEEE Journal of Solid-State Circuits*, 39 (12), pp. 2477-2491, Dec. 2004.

J. Wang, Z. Ren, and C. T.-C. Nguyen, "1.156-GHz self-aligned vibrating micromechanical disk resonator," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 51 (12), pp. 1607-1628, Dec. 2004.

A.-C. Wong and C. T.-C. Nguyen, "Micromechanical mixer-filters ("mixlers")," *IEEE/ASME Journal of Microelectromechanical Systems*, 13 (1), pp. 100-112, Feb. 2004.

Y.-T. Cheng, W.-T. Hsu, K. Najafi, C. T.-C. Nguyen, and L. Lin, "Vacuum packaging technology using localized aluminum/silicon-to-glass bonding," *IEEE/ASME Journal of Microelectromechanical Systems*, 11 (5), pp. 556-565, Oct. 2002.

K. Wang, A.-C. Wong, and C. T.-C. Nguyen, "VHF free-free beam high-Q micromechanical resonators," *IEEE/ASME Journal of Microelectromechanical Systems*, 9 (3), pp. 347-360, Sept. 2000.

F. D. Bannon III, J. R. Clark, and C. T.-C. Nguyen, "High frequency micromechanicalfilters," *IEEE Journal of Solid-State Circuits*, 35 (4), pp. 512-526, April 2000.

K. Wang and C. T.-C. Nguyen, "High-order medium frequency micromechanical electronic filters," *IEEE/ASME Journal of Microelectromechanical Systems*, 8 (4), pp. 534-557, Dec. 1999.

Service: Professor Nguyen's record of service contributions has been tremendous within EECS Department and outside of the University of Michigan. His record includes, among others, graduate committee, SSEL operation committee, panel reviews, international conference committees, technical study groups, and finally at DARPA workshops and management of eight programs. Recently he has been rated by his colleagues as the number one program manager now at DARPA! Professor Nguyen's service to his community and country has brought distinction to the University of Michigan and is commensurate with his promotion to Professor.

External Reviewers:

Reviewer (A): "Needless to say, he surpasses any test for promotion to full Professor – very few engineering faculty members at either your school or mine have had the impact that he has had over the past decade. I give his promotion to full Professor *my complete, enthusiastic endorsement.*"

Reviewer (B): "... I definitely have no reservations recommending Clark for promotion to *Professor with Tenure* at the University of Michigan and he meets the requirements for someone who is being considered for promotion and tenure in the Electrical Engineering and Computer Science Department at [my institution]. I am of the opinion that his experience at DARPA exposed him to more general problem formulation and solutions which in turn has prepared him for future professional growth in areas that go far beyond his expertise in Wireless MEMS."

Reviewer (C): "I believe at this time Clark has many opportunities be a full Professor at a number of Universities. I would most strongly recommend him for a full professor at [my institution]." "You have a great Professor [of his generation] with a great track record and great growth potential! I most strongly recommend the promotion of Dr. Clark Nguyen to full Professor."

Reviewer (D): "Dr. Nguyen has made an outstanding contribution to the field of MEMS, in particular in the field of RF-MEMS. His work has made the University of Michigan top ranked university in RF-MEMS research."

Reviewer (E): "Largely due to Clark's research, interest in "MEMS for communication" has erupted in all major sectors, from government agencies such as DARPA, DoD, and NASA; to industries across the world, including Motorola in the U.S., Nokia and Ericsson in Europe, Samsung in Korea, and Murata in Japan; to mainstream scientific magazine communities, such as Scientific American and Discovery, both

of whom have published articles on Clark's work; and even to widespread magazines, such as The Economist. No doubt, the burgeoning interest in his field has been spurred on by the numerous invited presentations that he has given and continues to give at a substantially higher frequency than any other of his peers."

Reviewer (F): "If Prof. [C]lark Nguyen applies as a Professor position at [my institution], I will certainly hire him because of above mentioned his quality and future potential." "Overall, I believe that Prof. Nguyen is one of the top researchers in the field of MEMS." "I have no doubt that he will prove to be an asset to the US research and both the US academic and industrial community."

Reviewer (G): "I would recommend the candidate without any doubts as full professor at Michigan. I also would recommend Clark Nguyen for a full professorship in [my institution]."

Reviewer (H): "Based on my evaluation, I consider Professor Clark Nguyen as a researcher of highest reputation with a great future. He will continue to contribute to the field of MEMS and integrated circuits and technology, for the benefit of the University of Michigan, for the benefit of the Department of Electrical Engineering and Computer Science and for the benefit of the research community world-wide."

Summary of Recommendation: Professor Clark T.C. Nguyen has established himself, at the national and international levels, as a world class superstar researcher in the area of microelectromechanical systems (MEMS). He has done pioneering work in resonator-based RF MEMS leading to many "firsts" discoveries. His research program makes Michigan Engineering highly regarded worldwide. He is an excellent teacher and mentor. He has also provided extraordinary service to the University, country (DARPA) and worldwide scientific community. His work in technology transfer is commendable. Overall his case for tenure is one of the most clear-cut the College of Engineering has ever had. It is with the support of the College of Engineering Executive Committee that I recommend him for promotion to professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

Ronald Gibala

Ronald Gibala,
Interim Dean, College of Engineering

May 2006