Approved by the Regents
May 20, 2010

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Cheri X. Deng, associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, is recommended for granting of tenure with her title of associate professor of biomedical engineering, Department of Biomedical Engineering, College of Engineering.

Academic Degrees:

Ph.D.	1995	Yale University, Department of Mechanical Engineering, New Haven, CT
M.Phil	1992	Yale University, Mechanical Engineering, New Haven, CT
M.S.	1988	Nanjing University, Acoustics, Nanjing, P. R. China
B.S.	1985	Nanjing University, Physics, Nanjing, P. R. China

Professional Record:

2007-present	Associate Professor, Biomedical Engineering, University of Michigan
2007-2008	Adjunct Associate Professor, Biomedical Engineering, Case Western Reserve University
2003-2006	Assistant Professor, Radiology, Case Western Reserve University
2003-2006	Assistant Professor, Mechanical and Aerospace Engineering, Case Western Reserve University
2002-2006	Assistant Professor, Biomedical Engineering, Case Western Reserve University
1996-2002	Research Staff, Biomedical Engineering Laboratories, Riverside Research Institute
1995-1996	Outside Research Associate/consultant, Biomedical Engineering Laboratories, Riverside Research Institute
1988-1990	Research Staff, Institute of Acoustics, Chinese Academy of Sciences

Summary of Evaluation:

Teaching: Professor Deng has made significant contributions to training students in her lab, and in developing and teaching courses. She is very active in advising graduate students, with six Ph.D. students currently being advised or co-advised in her lab. These students uniformly praise her mentoring abilities. She has one Ph.D. graduate from Case Western Reserve University. She has also mentored four Master's students and nine undergraduate students on research projects.

Professor Deng has developed a completely new graduate course, Ultrasound in Drug and Gene Delivery, and is currently co-developing another one, Cell and Microenvironment Engineering with Microtechnology and Ultrasound. Student evaluations in her graduate class were very high. In addition, Professor Deng has been involved in teaching two challenging, but important classes in the undergraduate biomedical engineering curriculum, Biomedical Instrumentation and Design and Biotransport.

Research: Professor Deng's contributions to research are impressive in their breadth of scope, significance, and originality. Her main research contributions include ultrasound-mediated drug and gene delivery through "sonoporation" of cell membranes, high-intensity focused-ultrasound ablation for treatment of cardiac arrhythmias, and endoscopic-ultrasound imaging for pancreatic cancer detection and treatment monitoring. Professor Deng and her research program are highly visible, both nationally and internationally. She has published 30 articles in high quality peer-reviewed journals. This work is well-cited. She has presented numerous invited talks at national and international conferences, departmental seminars, workshops, and an international summer school.

Her research program is well recognized and has received significant extramural funding, including two highly competitive NIH R01 awards that are currently ongoing. Her publication and funding records demonstrate that she is highly collaborative and interdisciplinary in her work. She has made several significant, original intellectual contributions to research in biomedical ultrasound and is well-positioned to continue making important discoveries in the future.

Recent and Significant Publications:

Yang, K., Zhou, Y., Ren, Q., Ye, J. and Deng, C.X., "Dynamics of microbubble generation and trapping by self-focused femtosecond laser pulses," *Applied Physics Letters*, 2009; 95: 051107.

Kumon, R.E., Aehle, M., Sabens, D., Parikh, P., Han, Y.W., Kourennyi, D. and Deng C.X., "Spatiotemporal effects of sonoporation on mammalian cells measured by real-time calcium imaging," *Ultrasound in Medicine and Biology*, 2009; 35: 494-506.

Zhou, Y., Cui, J. and Deng, C.X., "Dynamics of sonoporation correlated with acoustic cavitation activities," *Biophysical Journal*, 2008; 94(7):L51-3.

Zhou, Y., Shi, J., Cui, J. and Deng, C.X., "Effects of extracellular calcium on cell membrane resealing in sonoporation, *Journal of Controlled Release,* 2008; 126 (1):34-43.

Kumon, R.E., Aehle, M., Sabens, D., Parikh, P., Kourennyi, D. and Deng, C.X., "Ultrasound-induced calcium oscillations and waves in Chinese hamster ovary cells in the presence of microbubbles," *Biophysical Journal*, 2007; 93 (6): L29-31.

Deng, C.X., Qu, F., Nikolski, V.P., Zhou, Y. and Efimov, I.R., "Fluorescent real-time monitoring of cardiac focal ablation with HIFU in vitro," *Annals of Biomedical Engineering,* 2005; 33: 1417-1424.

Service: Professor Deng has been actively involved in service activities within the University of Michigan, as well as engaged in external service to both government and professional organizations. She has served on numerous institutional committees, including the graduate admissions committee, a faculty search committee and undergraduate education committee, as well as a planning committee for the North Campus Research Complex. It is particularly noteworthy that she is a charter member in the NIH study section on Biomedical Imaging and Technology, as well as serving as an elected member of the Bioeffects Committee of the American Institute of Ultrasound in Medicine. These activities indicate that Professor Deng is recognized as one of the emerging leaders in her field.

External Reviewers:

Reviewer A: "Several of her publications are very original. The paper on ultrasound induced cell-membrane porosity, which uses transient measurements of transmembrane voltage, is extremely original and unmatched in the literature. In addition, her measurement of a functional metric for monitoring HIFU cardiac ablation is very original as well. … I feel that Dr. Deng will continue to produce innovative research and is highly capable of contributing greatly to the research enterprise at the University of Michigan."

Reviewer B: "I note with particular interest that Dr. Deng has been able to publish both in the engineering journals and in the medical journals, which relate to her work. I consider this an important sign of her unusual ability to span the engineering and medical fields effectively. Thus Dr. Deng has managed to gain the respect of both the engineering and medical communities and to focus her work precisely on the area of overlap between the two. … She has a well-balanced record of accomplishments, clear indication of respect from the community of peers, commendable student reviews of her teaching ability, and a record that is accelerating as one would hope as her work matures."

Reviewer C: "Cheri consistently selects research areas that have a high impact. Perhaps I am being overly supportive when I say her papers are overall outstanding and significant. ... I would recommend this candidate wholeheartedly to be tenured as she would be a wonderful asset to the University of Michigan. Her body of work, her dedication and her personality merit her as an ideal candidate for this post."

Reviewer D: "Dr. Deng is strong in both theoretical analysis and experimental work, evidenced by the papers that she has published. ... She is considered a pioneer in assessing the effect of ultrasound on cell permeability and has published a number of landmark papers on this subject. ... There is little doubt that she is one of the bright young stars in biomedical ultrasonics. Her performance in research is rated outstanding."

Reviewer E: "I find her publications to be in high quality journals and those that I have read...I find [them] to be well written and novel contributions to the literature. ... Dr. Deng's funding record, like her publication record, has recently become stellar. ... I recommend the granting of tenure to Dr. Deng."

Summary of Recommendation: Professor Deng has made several significant contributions to the area of biomedical ultrasound. She is a dedicated teacher and mentor. Since arriving at Michigan, she has been an active member in service to Michigan. She is engaged in external service to both government and professional organizations. It is with the support of the College of Engineering Executive Committee that I recommend Cheri X. Deng for the granting of tenure in her title as associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering.

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

May 2010