Approved by the Regents
May 18, 2017

PROMOTION RECOMMENDATION
University of Michigan-Dearborn
College of Engineering and Computer Science

Gargi Ghosh, assistant professor of mechanical engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of mechanical engineering, with tenure, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2007	Chemical Engineering, University of Michigan, Ann Arbor, MI
M.S.	2002	Chemical Engineering, India Institute of Technology, Kanpur, India
B.S.	2000	Chemical Engineering, University College of Science and Technology, India

Professional Record:

2011 – present	Assistant Professor, Department of Mechanical Engineering, University of Michigan-Dearborn, Dearborn, MI
2008 – 2011	Post-doctoral Scientist, Department of Chemical and Biological Engineering, University of Wisconsin, Madison, WI

Summary of Evaluation:
Teaching: Professor Ghosh's teaching is rated as excellent. Professor Ghosh is an effective teacher, as evidenced by the teaching evaluations from both her students and her peers. Her average effectiveness from the student evaluations over the past five years was above 4.38 out of 5.0. This places her within the top 15% among the Department of Mechanical Engineering faculty members.

Professor Ghosh came to the Department of Mechanical Engineering at UM-Dearborn in 2008, after working for three years as a post-doctoral scientist at University of Wisconsin at Madison. She is the first faculty member for the new bioengineering program. She put a significant amount of effort in organizing the teaching laboratories for bioengineering and in modifying existing and developing new bioengineering courses. Since coming to the Dearborn campus as a tenure track assistant professor, she taught 17 regular course sessions, developed and taught three new undergraduate courses -- all in bioengineering. Additionally, she has supervised four teams of senior design projects, two of which won two college design competitions back to back (2015, 2016), a strong indication of her devotion to quality education at UM-Dearborn.

Research: Professor Ghosh's research is rated as excellent. Her research centers on development of functional polymeric materials (hydrogel) for biomedical applications with emphasis on hydrogel microparticles-based suspension array for point-of-care diagnostics and hydrogel matrices to examine the co-operativity of different micro-environmental cues (physical and chemical) in regulating the cellular responses. Since joining UM-Dearborn, she has obtained nine funded grants and contracts, three of which are externally funded by NSF, state agency and a private foundation. She has published a total of 18 journal papers, of which 11 were published

and one is under review, one conference paper, and 20 conference presentations since she assumed her current position in fall 2011. She supervised five M.S. theses and published their research findings in peer-reviewed journals.

Recent and Significant Publications:

Mohanty, S., Wu, Y., Chakraborty, N., Mohanty, P., Ghosh, G. Impact of alginate concentration on the viability, cryostorage, and angiogenic activity of encapsulated fibroblasts. *Materials Science and Engineering C*, 2016, 65, 269-277. Impact Factor: 3.42.

Zhao, Z., Al-Ameen, M.A., Duan, K., Ghosh, G., Lo, J. On-chip porous microgel generation for microfluidic enhanced VEGF detection. *Biosensors and Bioelectronics*, 2015, 74, 305-312. Impact Factor: 7.47.

Al-Ameen, M.A.; Li, J.; Beer, D.; Ghosh, G. Sensitive, quantitative, and high-throughput detection of angiogenic markers using shape coded hydrogel microparticles. Analyst, 2015,140, 4530-4539. Impact Factor: 4.1.

Wu, Y., Guo, B., Ghosh, G. Differential effects of tumor secreted factors on mechanosensitivity, capillary branching, and drug responsiveness in PEG hydrogels. Annals of Biomedical Engineering, 2015, 43, 2279-2290. Impact Factor: 2.887.

Ye, M., Mohanty, P., Ghosh, G. Biomimetic-apatite coated porous PVA scaffolds promote the growth of breast cancer cells. *Materials Science and Engineering C*, 2014, 44, 310-316. Impact Factor: 3.42.

Ye, M., Mohanty, P., Ghosh, G. "Morphology and properties of poly vinyl alcohol (PVA) scaffolds: impact of process variables. *Materials Science and Engineering C*, 2014, 42, 289-294. Impact Factor: 3.42.

Al-Ameen, M.A., Ghosh, G. Sensitive quantification of vascular endothelial growth factor (VEGF) using porosity induced hydrogel microspheres. *Biosensors and Bioelectronics*, 2013, 49C, 105-110. Impact Factor: 7.47.

Service: Professor Ghosh's service is rated as excellent. She has served on various department and college committees. Within the department, she has either served or is serving on six different committees. Since she was the first core member of the bioengineering faculty, she was asked to serve as the assistant director for the bioengineering program to strengthen the department effort in developing curriculum and research laboratories for bioengineering. She has served on two university-level committees and also has a good service record in her professional society.

External Reviewers:

Reviewer A: "Dr. Ghosh has established a strong history of authorship with eight papers in the last three years, all but one of these papers as senior author. The manuscripts are published in journals with good reputations. The manuscripts provide novel ways to use hydrogels in medical applications. The quantity and quality of her papers are good."

Reviewer B: "In my opinion, her best papers are the ones published in biosensors and bioelectronics. … Her research is of very high quality. It is impressive that all of the work in her group has been done with undergraduate students and MS students, and apparently no PhD students or postdocs."

Reviewer C: "From my perspective as a fellow researcher of the field of cell-biomaterial interactions applied to cancer, I find Prof. Ghosh's work to be of good quality. … This is a very careful study in a very popular research field in bioengineering, and it will likely be highly cited. Her lab's paper from Wu et al. is a fascinating new direction for her lab, where she controlled many cell behaviors via tuning the physical properties of the underlying substrate. The direction by her lab could lead to very exciting projects."

Reviewer D: "Her research program is highly competitive. Considering the fact that apparently she has not had a PhD student or a postdoc during her tenure at UM-D, her publication record is particularly impressive. … The major achievement is the NSF award she received as PI to acquire an MRI to the Dearborn campus of UM, which is viewed very positively, given its impact to the overall research group on the campus."

Reviewer E: "Overall, these papers are solid. The encompass materials preparation, hydrogel characterization and cell culture studies. Dr. Ghosh found a way to distinguish her research programs from those of her doctoral and postdoctoral mentors."

Reviewer F: "While this represents a notable publication record with a respectable rate of productivity, what is more impressive is the quality of work that these publications embody. Professor Ghosh has published her results in journals that carry strong impact factors and are relevant to the field. All of her publications appear in journals with impact factors that exceed 2, and two articles were published in *Biosensors and Bioelectronics*, with an impact factor 7.5."

Summary of Recommendation:
We are pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Gargi Ghosh for promotion to associate professor of mechanical engineering, with tenure, College of Engineering and Computer Science.

Anthony W. England, Dean
College of Engineering and Computer Science

Daniel Little, Chancellor
University of Michigan-Dearborn

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