

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Wei Lu, assistant professor of electrical engineering and computer science, Department of Electrical Engineering and Computer Science, College of Engineering, is recommended for promotion to associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

Academic Degrees:

Ph.D.	2003	Rice University, Physics, Houston, TX
M.A.	1999	Rice University, Physics, Houston, TX
B.S.	1996	Tsinghua University, Physics, Beijing, China

Professional Record:

2005-present	Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan
2003- 2005	Postdoctoral Research Fellow, Harvard University, Advisor: Professor Charles Lieber

Summary of Evaluation:

Teaching: Professor Lu has been an excellent instructor in the EECS Department, including classroom teaching for both undergraduate and graduate courses, and advising undergraduate and graduate research projects. He has done an outstanding job in establishing a graduate course sequence in the area of nanoelectronics, specifically in re-vamping the EECS 421 course and introducing a new version of the EECS 521 course. These graduate courses are very well received, where Professor Lu has received excellent feedback from end of course evaluations including Q1/Q2 scores of 4.86/4.86 in the first semester when the new version of EECS 521 was introduced in winter 2008. He has also done a great job teaching undergraduate courses in semiconductor devices, including the junior level EECS 320 course, and the EECS 421 course on transistors that is shared between seniors and first year graduate students. Professor Lu has an excellent record in mentoring students on research projects, including graduating three Ph.D., and supervising a current group of eight Ph.D. students and seven undergraduate students in research.

Research: Professor Lu has established a strong research program in nanoelectronics, where he is recognized both nationally and internationally for his pioneering contributions to crossbar memories and nanowire devices. His research in nanoelectronics has advanced the state of the art in device technologies, and will provide a means of sustaining technical advances in electronics. He is well known for his demonstration of memristor devices that may form the next generation of memory electronics, and for several contributions to nanowire devices including nanowire thin film transistors, high-Q electromechanical resonators, and tunable spin orbit coupling effects in nanowires. He has demonstrated excellent research accomplishments since arriving at the University of Michigan, and has published his work in more than 15 peer-reviewed articles with students as co-authors. His research publications have been in selective, high-impact journals that are the premier venues for his field of study. Professor Lu has been highly successful in gaining external research funding for his efforts, totaling over \$2M in sponsored research. Furthermore, his research has led to commercialization of his research findings on crossbar memory devices, with an initial round of funding totaling \$4M.

Recent and Significant Publications:

- “Strong and Tunable Spin-Orbit Coupling of One-Dimensional Holes in Ge/Si Core/Shell Nanowires,” X.-J. Hao, T. Tu, G. Cao, C. Zhou, H.-O. Li, G.-C. Guo, W. Y. Fung, Z. Ji, G.-P. Guo, and W. Lu, *Nano Letters*, 10, 2956–2960 (2010).
- “Nanoscale Memristor Device as Synapse in Neuromorphic Systems,” S. H. Jo, T. Chang, I. Ebong, B. Bhavitavya, P. Mazumder and W. Lu, *Nano Letters*, 10, 1297-1301 (2010).
- “Mechanical Properties of Vapor-Liquid-Solid Synthesized Silicon Nanowires,” Y. Zhu, F. Xu, Q. Qin, W. Y. Fung, and W. Lu, *Nano Letters*, 9, 3934-3939 (2009).
- “High-Density Crossbar Arrays Based on a Si Memristive System,” S. H. Jo, K.-H. Kim and W. Lu, *Nano Letters* 9, 870-874 (2009).
- “CMOS Compatible Nanoscale Nonvolatile Resistance Switching Memory,” S. Jo, and W. Lu, *Nano Letters* 8, 392-397 (2008).
- “High-Performance Transparent Conducting Oxide Nanowires,” Q. Wan, E. N. Dattoli, W. Y. Fung, W. Guo, Y. Chen, X. Pan, and W. Lu, *Nano Letters*, 6, 2909-2915 (2006).

Service: Professor Lu has made significant service contributions to the graduate program of the EECS Department and to his field of nanoelectronic materials and devices. His role as a graduate student academic advisor, service on the graduate admissions committee, and current role on the ECE Publicity committee has helped to enhance and sustain the quality of graduate students and research efforts in the program. Professor Lu has established a name for himself in the field of nanoelectronics, and has been invited to serve on several program committees and editorial boards important to the field, including several IEEE conferences on nanoscale devices, the editorial board of the *Micro and Nanosystems* journal, and current role as co-editor-in-chief of the journal *Nanoscale*.

External Reviewers:

Reviewer A: “... all signs in this package point to a scientist whose star is clearly on the rise. I found the paper (Nanolett 2009) on High Density Crossbar Memristor memories to be scholarly work, well done, and extending the memristor concept to a level that I had not seen before - even by the HP group that is pushing this concept so hard.”

Reviewer B: “These facts allow me to believe that by his achievements and character Dr. Lu stands well out of his peer group of [junior] researchers, and I am confident that his statue will continue to grow.”

Reviewer C: “... he has developed a number of innovative device structures based on nanowire and amorphous Si materials – I think that his device contributions compare favorably to those of more senior faculty. ... Wei is one of the few faculty who can combine both innovative growth techniques and serious device fabrication in a single group. While many other groups have focused on a narrow aspect of nanowire electronics, Wei has show [sic] an ability to innovate in a number of areas, ranging from traditional transistors to biologically-inspired synapses, and including the recent memristor work.”

Reviewer D: “Wei Lu probably stands alone in his position on high density non-volatile devices and their ability to progress current silicon technology in NaND technology. ... In summary, I regard Wei Lu not just as a worthy candidate for promotion and tenure, but as one of the world’s future players in nanotechnology applied to devices.”

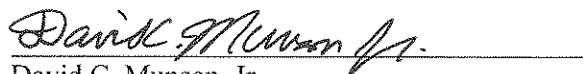
Reviewer E: “I rank him to be in the top 10% in comparison to his peers in any US major research university.”

Reviewer F: "His research has revealed very interesting phenomena with a clear vision for future device technology."

Reviewer G: "I would not hesitate to rank him at the top 10% tile measured by his ability to foresee the future need, and motivation to broader impact to technical community of nanoelectronics as well as what he accomplished by now."

Reviewer H: "In contrast to many of the reports in the literature on similar topics, the majority of Dr. Lu's publications provide a comprehensive and detailed analysis of device performance and statistical variations.... Dr. Lu is emerging as a strong and independent researcher in the field of nanowire electronics. He has grown a reputable and very successful research program at Michigan. I highly recommend that Dr. Lu be promoted to the rank of associate professor and granted tenure."

Summary of Recommendation: Professor Lu is a very productive scientist in the area of nanoelectronics. He is an excellent teacher and mentor who has made significant service contributions to his graduate program and professional field. It is with the unanimous support of the College of Engineering Executive Committee that I recommend Wei Lu for promotion to associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.



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