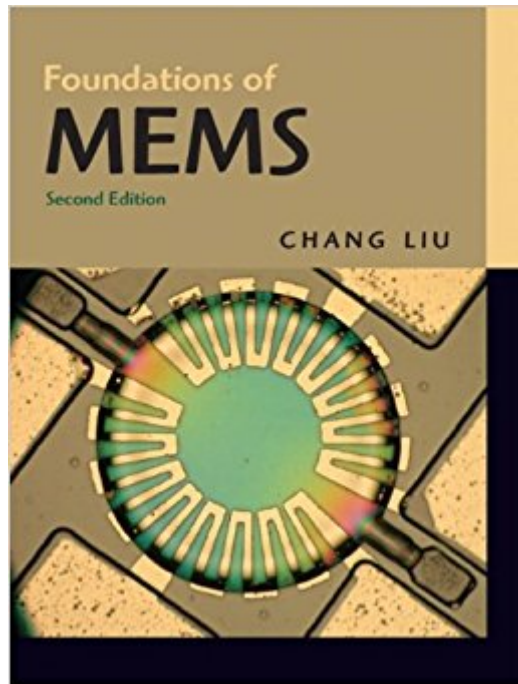




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# Foundations Of MEMS (2nd Edition)



## Synopsis

For courses in Micro-Electro-Mechanical Systems (MEMS) taken by advanced undergraduate students, beginning graduate students, and professionals. Foundations of MEMS is an entry-level text designed to systematically teach the specifics of MEMS to an interdisciplinary audience. Liu discusses designs, materials, and fabrication issues related to the MEMS field by employing concepts from both the electrical and mechanical engineering domains and by incorporating evolving microfabrication technology—all in a time-efficient and methodical manner. A wealth of examples and problems solidify students' understanding of abstract concepts and provide ample opportunities for practicing critical thinking.

## Book Information

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## Customer Reviews

Chang Liu received his M.S. and Ph.D. degrees from the California Institute of Technology in 1991 and 1995, respectively. His Ph.D. thesis was titled Micromachined sensors and actuators for fluid mechanics applications. In January 1996, he joined the Microelectronics Laboratory of the University of Illinois as a postdoctoral researcher. In January 1997, he became an assistant professor with major appointment in the Electrical and Computer Engineering Department and joint appointment in the Mechanical and Industrial Engineering Department. In 2003, he was promoted to the rank of Associate Professor with tenure. In 2007, Chang Liu joined Northwestern University (Evanston, Illinois) as a full professor of engineering. He established the MedX Laboratory to conduct advanced engineering research for medicine and health care. Dr. Liu has 20 years of

research experience in the MEMS area and has published 200 technical papers in journals and refereed conference proceedings. He teaches undergraduate and graduate courses covering broad-ranging topics, including MEMS, solid-state electronics, electromechanics, sensor technology, circuits, dynamics, and heat transfer. He won a campus "Incomplete list of teachers ranked as excellent" honor in 2001 for developing and teaching the MEMS class, a precursor to this book. He received the National Science Foundation's CAREER award in 1998 for his research proposal of developing artificial haircells using MEMS technology. He is currently a Subject Editor of the IEEE/ASME Journal of MEMS, and was an Associate Editor of the IEEE Sensors Journal. His work has been cited in popular media. Dr. Liu is a cofounder of Integrated Micro Devices (IMD) Corporation and a member of the scientific advisory board of Nanolnk Corporation (Chicago, IL). In 2004, he won the University of Illinois College of Engineering Xerox Award for Faculty Research. In the same year, he was elected a Faculty Associate at the Center for Advanced Studies at the University of Illinois, to pursue research in large-format integrated sensors. He is a Fellow of the IEEE, the world's largest professional association for the advancement of technology.

Between reviews from disgruntled students and people who were reviewing the seller rather than the book, let's see if I can squeeze in a (hopefully) impartial review for this book. The book provides a rather decent review of the mainstream techniques for the design and fabrication of MEMS, and is a rather good reference book for Electrical Engineers to have handy for calculation of mechanical properties of simple structures. It does an ok job of teaching the basics, which makes it ok for (as was said before) advanced undergraduates or graduate students. Having said that, there are many many cons: The first one is the price. Probably in account of how rare this book is (which may or may not tell you something about how often it is required and used), the price is in my opinion sky-high. Go for the international version of this book if you are outside the US, or choose another one. The proposed questions and examples are a mess, and that's an understatement. The meticulous student will easily notice many answers and developments are wrong, and many examples skip absolutely essential steps to obtain the answer (which makes things worse when the answer is wrong, and at times it is). While it is possible to obtain the right answer by being cautious, the average student will be very frustrated by not obtaining the results the book presents, without knowing they're wrong. Overall, interesting to have as a reference. I would not use it for teaching, or if so, I would double-check every chapter I teach for accuracy.

Using this book for an undergrad MEMS course open to both Electrical and Mechanical Engineering students. It puts things in entry-level terms, and provides a good general overview of MEMS characteristics and fabrication processes

I changed my rating because this is the first time I am rating something and want to check all the stars (I was just curious). Sorry about that. I would recommend this book and the page to my co-workers. thanks!

I needed the book for class, and ended up getting it quicker than was expected in my wildest dreams. Thanks!

This covers the different types of MEMS transducer -- sensing and actuation methods, and updated with the latest trends in MEMS industry

I bought this from Amazon, but it had a blue pen mark that covered 1/4 of the page just inside the cover

I think it would work well for both mechanical and electrical engineering students, at the advanced undergraduate level, and would work for a well-motivated student in the life sciences as well. I used it in a self-study mode and found it to be quite good, but a little short of excellent. Compared with current research, MEMS is a rapidly advancing field, the book seems a little old already (2005 publication date). I was also lukewarm on the choice of examples which seemed rather scattered between commercial applications and experimental applications. Still, this is a very good textbook and what I'd use for teaching a class on this material.

A well written book on MEMS

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