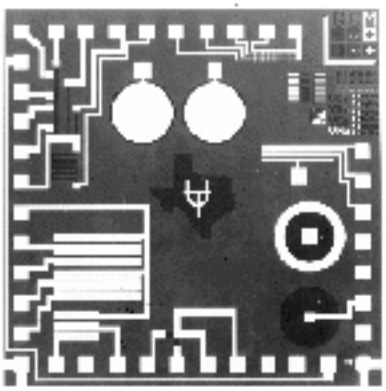
IC Fab Lab Manual

The University of Texas at Austin

Microelectronics Fabrication Teaching Laboratory
Laboratory Manual



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Preface

The Microelectronics Fabrication Laboratory has now been in operation here at UT for almost fifteen years; even so, it is still a lab course which requires constant updating. This course has a number of objectives, chief among them your exposure to basic silicon device processing. You will be required to make use of information from many areas: solid state physics, chemistry, electrical engineering, and computer science. Regardless of your future intentions, we feel the material covered in lecture, and your experiences in the lab, will be very valuable. The use of integrated circuits is pervasive, and knowledge of how they are made is an important compliment to your knowledge of how they can be used.

This laboratory is a synthesis of the work of a number of people. Similar laboratories at Caltech (under the supervision of Prof. Jim McCaldin and Prof. David Rutledge) and at the University of Illinois (originally developed by Prof. Ben Streetman) have provided both inspiration and guidance. Industrial support has been provided by Bell Laboratories, Advanced Micro Devices, Motorola, and Texas Instruments. Both TI and Monsanto have provided silicon wafers for our use. The Semiconductor Research Corporation has also provided generous support for the development of our new mask set. The technical staff (under the supervision of Mr. Harold Traxler and Marty Ringuette) has provided invaluable assistance in setting up and maintaining the lab equipment. The help of Philip Cheung, Doug Miller, Jeff Meitz, Stu Wentworth, Carl Kyono, Doug Holberg, and Garrett Neaves in designing the experiments is also gratefully acknowledged.

This lab is quite different from any other of the labs in your ECE curriculum. The processing we do is very complicated, and there will be frequent, and often very subtle, problems associated with it. You must be very patient and **methodical** at all times. Since we have essentially only one set of equipment, you must also be very careful. Please feel free to make suggestions that you think will help improve the lab.

Updates to this manual are made as necessary; make sure to check the World Wide Web version of the lab manual at:

http://weewave.mer.utexas.edu/DPN_files/courses/FabLab/Fab_Lab_Manual/TOC.html

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