

Preface

This volume is a **study guide** for the author's textbook, **Fundamentals of Solid-State Electronics** (first edition, October 1991) (FSSE). It originated from the viewgraphs used by this author when he taught the one-semester junior-level introductory core course in solid-state device in the fall-1989 semester at the University of Florida using FSSE. A copy of the viewgraphs was given to the registered students before the lectures. There were several purposes and advantages: to help the students to focus on the lectures by reducing copying from the blackboard, and to allow the instructor to focus on verbal delivery by reducing writing on the blackboard. Students said they used it to review the materials for the examinations and to do homework problems. It also helped the instructor to provide a coverage of consistency in topic and material, and a presentation of uniformity in detail and depth. Highlights and additional notes were handwritten onto the viewgraphs by the instructor prior to and during the lecture. Thus, it is not only a **study guide** for the students but also a **teaching aid** for the instructors.

The original viewgraphs from the fall-1989 lectures were updated in 1990 by this author for use by his colleagues at Florida. While formatting the camera-ready manuscript for this study guide during June-November, 1993, the viewgraph pages were further edited to include correction of misprints and omissions in FSSE. Viewgraph pages were added to cover most of the advanced topics in FSSE which were taught in advanced courses but not in the introductory one-semester course as indicated by a sample course outline on pp. xi-xiii. Numerical examples on state-of-the-art and future-generation submicron MOS-ULSI were added. A new appendix, B, covers problems encountered in the design of submicron MOST and failure analysis of submicron MOST and BJT due to oxide reliability. Viewgraphs (8.5"×11") to give sufficiently large projection in a classroom of 80-100 students can be made directly by a one-step 1.2× enlargement of the larger-character pages. Pages with smaller prints were enlarged 1.8× by copier to give two 8.5"×11" viewgraphs each covering half of the text page.

I would like to acknowledge several colleagues who used the viewgraphs to deliver their lectures, in particular, Arnost Neugroschel and Toshikazu Nishida, who continually made suggestions from their teaching and research experiences, and several graduate and undergraduate students who helped correcting some typographical errors while grading the courses when I taught (Scott E. Thompson and Jack T. Kavalieros during fall-89, and Xin Tong, Michael Carroll, Yi Lu, and Steven Walstra during fall-93). Special appreciation is due Ms. Barbara Aman (World Scientific, Singapore) for editorial assistance throughout the entire effort.

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November 11, 1993