

CONTENTS

| | |
|---|-----|
| Preface | ix |
| 1. Unit Processes in the Manufacture of Integrated Circuits | 1 |
| Pieter Stroeve | |
| 2. Conservation Laws for Mass, Momentum, and Energy: Application to Semiconductor Devices and Technology | 12 |
| Bill Baerg | |
| 3. Silicon Oxidation: A Process Step for the Manufacture of Integrated Circuits | 31 |
| Eugene A. Irene | |
| 4. Convective Diffusion in Zone Refining of Low Prandtl Number Liquid Metals and Semiconductors | 47 |
| William N. Gill, Nicholas D. Kazarinoff, and John D. Verhoeven | |
| 5. Research Opportunities in Resist Technology | 70 |
| David S. Soong | |
| 6. Physical and Chemical Modifications of Photoresists | 95 |
| Peter C. Sukanek | |
| 7. Effects of Developer Concentration on Linewidth Control in Positive Photoresists | 108 |
| Tom Batchelder | |
| 8. The Advantage of Molecular-Beam Epitaxy for Device Applications | 118 |
| A. Y. Cho | |
| 9. Chemical and Physical Processing of Ion-Implanted Integrated Circuits | 127 |
| Joseph C. Plunkett | |
| 10. Plasma-Assisted Processing: The Etching of Polysilicon in a Diatomic Chlorine Discharge | 164 |
| Herbert H. Sawin, Albert D. Richards, and Brian E. Thompson | |
| 11. Applications of Oxides and Nitrides of Germanium for Semiconductor Devices | 178 |
| O. J. Gregory and E. E. Crisman | |
| 12. Vapor-Phase Epitaxy of Group III-V Compound Optoelectronic Devices | 221 |
| G. H. Olsen | |
| 13. Advanced Device Isolation for Very Large Scale Integration | 241 |
| H. B. Pogge | |
| 14. Solid-Liquid Equilibrium in Ternary Group III-V Semiconductor Materials | 276 |
| T. L. Aselage, K. M. Chang, and T. J. Anderson | |

| | |
|---|------------|
| 15. Preparation of Device-Quality Strained-Layer Superlattices | 297 |
| R. M. Biefeld | |
| 16. Wafer Design and Characterization for Integrated-Circuit Processes | 310 |
| R. Schindler, D. Huber, and J. Reffle | |
| Author Index | 335 |
| Subject Index | 335 |