

Contents :

Preface

Acknowledgments

Part I. Nanophysics

1. **Inside Submicron MOSFETs** — W. J. Skocpol
2. **Localization and Electron-Electron Interaction Effects in Platinum Silicide Thin Wires** — S. Ishida et al.
3. **Quantum Interference Effect in Narrow n+-GaAs Wires** — K. Ishibashi et al.
4. **A Silicon Field Emitter Array Planar Vacuum FET Fabricated with Microfabrication Techniques** — H. F. Gray and G. J. Campisi
5. **Confinement and Fluorescence of Aromatic Molecules in Microporous Amorphous Superlattices** — C. B. Roxlo et al.

Part II. Nanofabrication

6. **Microfabrication Technologies for Advanced VLSI Devices** — Y. Horiike et al.
7. **Microporous Amorphous Superlattices**
8. **30-nm-Scale Device Fabrication for Electron Transport Studies**
9. **Nanometer-Scale Lithography and Pattern Transfer Techniques**
10. **Submicron Device Fabrication Methods**

Part III. Silicon Micromachining and Mechanical Structures

11. **Micromachining of Silicon Mechanical Structures** — G. Kaminsky
12. **Silicon as a Mechanical Material**
13. **Fabrication of Micromechanical Structures**
14. **Precision Silicon Micromachining**
15. **Microstructured Silicon Devices**

Part IV. Advanced Lithography and Patterning

16. **Electron-Beam Lithography**
17. **X-Ray Lithography**
18. **High-Resolution Resist Technology**
19. **Pattern Transfer Processes**
20. **Submicron Fabrication Strategies for VLSI**

Part V. Laser Processing and Direct-Write Techniques

21. **Materials Surface Processing with Excimer Lasers**
22. **Laser-Assisted Microfabrication**
23. **Laser Patterning Technologies**
24. **Area-Selective Laser Processing for Multichip Interconnects**
25. **Direct-Write Fabrication Techniques**

Part VI. Plasma and Dry Etching Technologies

- 26. Reactive Ion Etching (RIE)
- 27. Plasma Processing of Semiconductor Materials
- 28. Dry Etching Mechanisms
- 29. Surface Modification Techniques
- 30. Advanced Etch Process Control

Part VII. Materials Processing and Thin Films

- 31. Thin-Film Deposition Techniques
- 32. Surface Engineering for Microelectronics
- 33. Materials Characterization for Microfabrication
- 34. Processing-Induced Material Modifications
- 35. Novel Materials for Integrated Circuits

Part VIII. Applications and Future Directions

- 36. VLSI Manufacturing Technologies
- 37. Integrated Sensor Fabrication
- 38. Microelectronic Packaging and Interconnects
- 39. Emerging Microfabrication Concepts
- 40. Future Trends in Nanometer-Scale Fabrication

Author Index