

---

---

# CONTENTS

---

**Preface**      **vii**

**Acknowledgments**      **ix**

**Theme Paper**      **1**

Maxwell's Children Light the Way      **3**  
Anthony J. DeMaria (*IEEE Circuits and Devices Magazine*, March 1991).

**Chapter 1**      **Integrated Circuit Technology**      **11**

Modeling GaAs/AlGaAs Devices: A Critical Review      **13**  
Herbert S. Bennett (*IEEE Circuits and Devices Magazine*, January 1985).  
Overview      **22**  
Harry T. Weaver (*IEEE Circuits and Devices Magazine*, July 1987).  
Latchup in CMOS Technologies      **25**  
Ronald R. Troutman (*IEEE Circuits and Devices Magazine*, May 1987).  
Porous Silicon Techniques for SOI Structures      **32**  
Sylvia S. Tsao (*IEEE Circuits and Devices Magazine*, November 1987).  
Ferroelectric Materials for 64 Mb and 256 Mb DRAMs      **37**  
Lauren H. Parker and Al F. Tasch (*IEEE Circuits and Devices Magazine*, January 1990).

**Chapter 2**      **Integrated Circuit Manufacturing and Novel Circuit Design**      **47**

Manufacturing-Based Simulation: An Overview      **49**  
Stephen W. Director (*IEEE Circuits and Devices Magazine*, September 1987).  
Micro-Automating Semiconductor Fabrication      **56**  
Ilene J. Busch-Vishniac (*IEEE Circuits and Devices Magazine*, July 1991).  
Robotic Applications in Electronic Manufacturing      **62**  
John H. Powers, Jr. (*IEEE Circuits and Devices Magazine*, January 1985).  
Sights and Sounds of Chaos      **66**  
Leon O. Chua and Rabinder N. Madan (*IEEE Circuits and Devices Magazine*, January 1988).  
Introduction to Implantable Biomedical IC Design      **77**  
Larry J. Stotts (*IEEE Circuits and Devices Magazine*, January 1989).  
Oversampled Data Conversion Techniques      **84**  
Vladimir Friedman (*IEEE Circuits and Devices Magazine*, November 1990).

**Chapter 3**      **Optical Technology**      **91**

Photochemical Processing of Semiconductors: New Applications for Visible and Ultraviolet Lasers      **93**  
J. Gary Eden (*IEEE Circuits and Devices Magazine*, January 1986).

