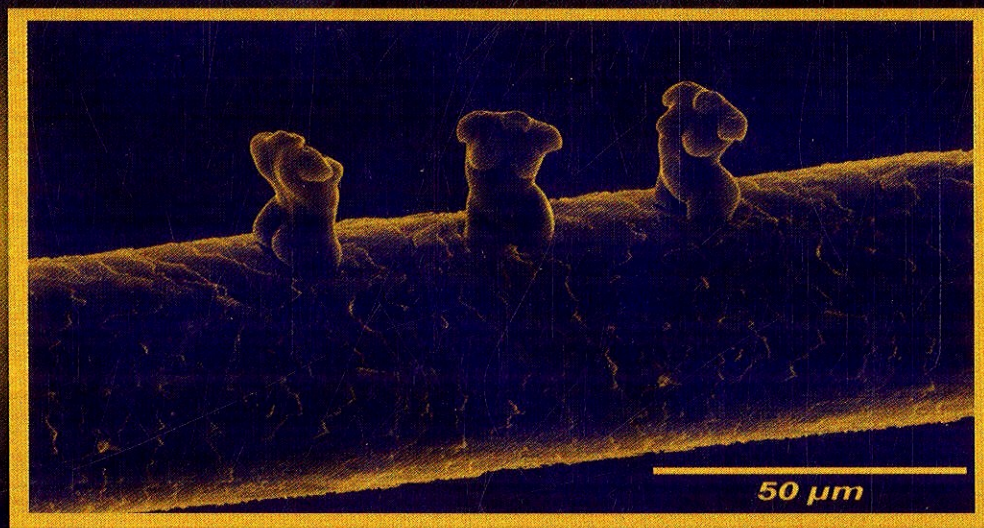


Third Edition

Fundamentals of
MICROFABRICATION
AND NANOTECHNOLOGY

VOLUME II

**Manufacturing Techniques
for Microfabrication
and Nanotechnology**



Marc J. Madou

 **CRC Press**
Taylor & Francis Group

Contents

Roadmap	ix
Author	xi
Acknowledgments	xiii

PART I Lithography

Introduction to Part I	2
1 Photolithography	3
2 Next-Generation Lithographies and Lithography Research	89

PART II Pattern Transfer with Subtractive Techniques

Introduction to Part II	148
3 Dry Etching	155
4 Wet Chemical Etching and Wet Bulk Micromachining—Pools as Tools	215
5 Thermal Energy-Based Removing	319
6 Mechanical Energy-Based Removing	351

PART III Pattern Transfer with Additive Techniques

Introduction to Part III	386
7 Physical and Chemical Vapor Deposition—Thin Film Properties and Surface Micromachining	391
8 Chemical, Photochemical, and Electrochemical Forming Techniques	509