

Contents

CONTRIBUTORS TO VOLUME 2	v
PREFACE	vii
CONTENTS OF VOLUME 1	xi
ARTICLES PLANNED FOR VOLUME 3	xii

Structural Disorder Phenomena in Thin Metal Films

C. A. Neugebauer

I. Introduction	1
II. Structural Disorder Introduced during Thin Film Formation	2
III. Properties of Island Films	22
IV. Highly Disordered Films Prepared at Low Temperatures	37
V. The Surface Area of Evaporated Metal Films	47
VI. The Tensile Properties of Thin Metal Films	53
References	59

Interaction of Electron Beams with Thin Films

C. J. Calbick

I. Historical Introduction	63
II. Some General Considerations	65
III. Stopping Power of Matter for Electrons	67
IV. Theory of Scattering of Medium-Fast Electrons by Single Atoms	73
V. Comparison of Theory and Experiment	92
VI. Effects Due to Proximity of Atoms	98
VII. Electron Microscopy and Diffraction	109
VIII. Physical Effects of Energy Absorption	122
IX. Electron Energies Greater Than $U = 0,2$ (~ 100 kev)	134
Appendix: Symbols and Notations	139
References	140

The Insulated-Gate Thin-Film Transistor

Paul K. Weimer

I. Introduction	147
II. Historical Background of the Insulated-Gate Thin-Film Transistor	149
III. Description of the TFT Structure	151
IV. Operating Characteristics of the CdS TFT	153
V. Physical Processes in the Insulated-Gate TFT	157

VI. Fabrication of Thin-Film Transistors	178
VII. Special Forms of Thin-Film Transistors	183
VIII. Thin-Film Circuit Applications of the TFT	187
References	190

Measurement of Optical Constants of Thin Films

O. S. Heavens

I. Introduction	193
II. Theory of Reflection and Transmission by Thin Films	194
III. Principal Methods for Determining Optical Constants	209
IV. Special Methods of Determining Optical Constants and Film Thicknesses	229
V. Choice of Method	236
References	237

Antireflection Coatings for Optical and Infrared Optical Materials

J. Thomas Cox and Georg Hass

I. Introduction	239
II. General Considerations	240
III. Theory and Design of Antireflection Coatings	242
IV. Experimental Techniques and Practical Coatings	284
References	303

Solar Absorptance and Thermal Emittance of Evaporated Coatings

Louis F. Drummeter, Jr. and Georg Hass

I. Introduction	305
II. Parameters of Interest and Their Significance	307
III. Determination of Solar Absorptance and Thermal Emittance	313
IV. The Optical Properties of Evaporated Metal Films with and without Surface Coatings	333
References	358

Thin-Film Components and Circuits

N. Schwartz and R. W. Berry

I. Introduction	363
II. Thin-Film Deposition Techniques	365
III. Substrates	370
IV. Resistors	378
V. Capacitors	398
VI. Thin-Film Circuits	409
References	419
AUTHOR INDEX	427
SUBJECT INDEX	437