

CONTENTS

CONTRIBUTORS TO VOLUME 61	vii
FOREWORD	ix

Potential Calculations in Hall Plates

GILBERT DE MEY

I. Introduction	2
II. Fundamental Equations for a Hall-Plate Medium	3
III. The Van Der Pauw Method.	7
IV. Influence of the Geometry on Hall-Mobility Measurements	9
V. Conformal Mapping Techniques.	10
VI. Relaxation Methods	15
VII. The Boundary-Element Method for Potential Calculations in Hall Plates	18
VIII. Improvement of the Boundary-Element Method	38
IX. Conclusion	48
Appendix 1. The Three-Dimensional Hall Effect	49
Appendix 2. On the Existence of Solutions of Integral Equations	52
Appendix 3. Green's Theorem	54
Appendix 4. The Hall-Effect Photovoltaic Cell	57
Appendix 5. Contribution of the Hall-Plate Current to the Magnetic Field	58
Appendix 6. Literature	59
References	59

Impurity and Defect Levels (Experimental) in Gallium Arsenide

A. G. MILNES

I. Introduction	64
II. Possible Native Defects and Complexes	65
III. Traps (and Nomenclature) from DLTS Studies	76
IV. Levels Produced by Irradiation	81
V. Semi-Insulating Gallium Arsenide with and without Chromium	91
VI. Effects Produced by Transition Metals.	100
VII. Group I Impurities: Li, Cu, Ag, Au	108
VIII. Shallow Acceptors: Be, Mg, Zn, Cd	116
IX. Group IV Elements as Dopants: C, Si, Ge, Sn, Pb	118
X. Oxygen in GaAs.	123

XI. Group VI Shallow Donors: S, Se, Te	127
XII. Other Impurities (Mo, Ru, Pd, W, Pt, Tm, Nd)	128
XIII. Minority-Carrier Recombination, Generation, Lifetime, and Diffusion Length	131
XIV. Concluding Discussion	141
References	142

Quantitative Auger Electron Spectroscopy

M. CAILLER, J. P. GANACHAUD, AND D. ROPTIN

I. Introduction	162
II. General Definitions	167
III. Dielectric Theory of Inelastic Collisions of Electrons in a Solid	173
IV. Elastic Collisions	185
V. Auger Transitions in a Solid	187
VI. Quantitative Description of Auger Emission	213
VII. Auger Quantitative Analysis	244
VIII. Conclusion	289
References	289

The Wigner Distribution Matrix for the Electric Field in a Stochastic Dielectric with Computer Simulation

D. S. BUGNOLO AND H. BREMMER

I. Introduction	300
II. The Differential Equation for the Electric Field Correlations	303
III. Derivation of the Equations for the Wigner Distribution Functions	313
IV. Related Equations for the Wigner Distribution Function	325
V. Asymptotic Equations for the Wigner Distribution Function	330
VI. Equations for Some Special Cases	335
VII. A Brief Review of Other Theoretical Methods	345
VIII. The Coherent Wigner Function	347
IX. Computer Simulation of the Stochastic Transport Equation for the Wigner Function in a Time-Invariant Stochastic Dielectric	354
X. Conclusions	382
Appendix 1. A Listing of Experimental Program Number Two for the Case of an Exponential Space Correlation Function	383
Appendix 2. A Sample of a Computer Simulation	386
References	388

AUTHOR INDEX	391
SUBJECT INDEX	402