

# Contents

CONTRIBUTORS . . . . .	vii
PREFACE . . . . .	ix

## Some Fundamentals of Grain Growth

D. WEAIRE AND S. McMURRY

I. Introduction . . . . .	1
II. Ideal Grain Growth . . . . .	3
III. Some Elementary Solutions . . . . .	7
IV. The Motion of Boundary Intersections in 2D and 3D . . . . .	10
V. The Law of Mullins and von Neumann . . . . .	13
VI. Asymptotic Properties and the Fate of Small Cells . . . . .	18
VII. Approximate Models . . . . .	19
VIII. Three-Dimensional Simulation . . . . .	24
IX. Analogous Systems . . . . .	24
X. Separated Grains: The Lifshitz-Slyozov Theory . . . . .	26
XI. Conclusions . . . . .	35

## Nucleation Theory

DAVID T. WU

I. Introduction . . . . .	38
II. Classical Theory . . . . .	39
III. Kinetic Approach . . . . .	57
IV. Rate Equation . . . . .	93
V. Fokker-Planck Equation . . . . .	110
VI. Topics in Multicomponent Nucleation . . . . .	135

## Driven Alloys

GEORGES MARTIN AND PASCAL BELLON

I. Introduction . . . . .	189
II. Typical Examples of Phase Transformations in Driven Alloys . . . . .	191
III. Phenomenological Theory . . . . .	221
IV. Typical Predictions and Experimental Assessments . . . . .	249
V. Conclusions . . . . .	319

## Light Emission from Silicon

L. C. KIMERLING, K. D. KOLENBRANDER, J. MICHEL, AND J. PALM

I. Overview . . . . .	333
II. Intrinsic Luminescence in Silicon . . . . .	339
III. Extrinsic Luminescence . . . . .	342

IV. Silicon Alloys . . . . .	360
V. Strain Fields . . . . .	363
VI. Nanostructured Silicon . . . . .	366
VII. Applications . . . . .	373
VIII. Conclusions . . . . .	380
AUTHOR INDEX . . . . .	383
SUBJECT INDEX . . . . .	395