

Table of Contents

Structure of the Solid-Liquid Interface	
A. Bonissent	1
Melting and Solidification of Epitaxial Structures and Intergrowth Compounds	
P. Bak	23
Microscopic Theory of the Growth of Two-Component Crystals	
W. Haubenreisser and H. Pfeiffer	43
Statistics of Surfaces, Steps and Two-Dimensional Nuclei: A Macroscopic Approach	
V. V. Voronkov	75
Surface and Volume Diffusion Controlling Step Movement	
J. van der Eerden	113
Author Index Volumes 1-9	145

Structure of the Solid-Liquid Interface

Alain Bonissent

CRMC 2, CNRS, Campus de Luminy, Case 913, F-13288 Marseille-Cedex 9

Theoretical works on the structure and thermodynamic properties of the solid-liquid interface of a simple substance are reviewed. The methods of investigation follow those which have been applied in the case of the bulk liquids: Bernal random packing of hard sheres, computer simulations and perturbation theory. Application of these techniques allows a description of the interface, in terms of density profile and structure of the interfacial layers. The interfacial specific free energy is estimated in the case of the (111) fcc orientation.

Future developments will tend to the calculation of the interfacial free energy in different directions, as well as to a better understanding of the phenomena which occur at the interface during growth of a crystal from the melt.

List of Symbols	2
I. Introduction	3
II. Models of the Crystal-Melt Interface	5
III. Computer Simulations	11
IV. Perturbation Theory	15
V. Conclusion	19
VI. References	20