

# Contents

Contributors .. .. .	v
General Preface .. .. .	vii
Preface to Volume 10 .. .. .	ix

## 1. Surface Structures and Phase Transitions—Exact Results

D. B. ABRAHAM

I. Introduction .. .. .	2
II. Interfacial Free Energy and Phase Transition in the Ising Ferromagnet	5
III. Correlation Functions in the Interface—Planar Model .. .. .	17
IV. Intrinsic Structure of Interface .. .. .	23
V. Results in Three Dimensions .. .. .	27
VI. Surface Models .. .. .	33
VII. Exactly-solvable Random-surface Models .. .. .	40
VIII. Phase Transitions in Surfaces— $d = 2$ .. .. .	48
IX. Surface Transitions in Three-dimensional Systems .. .. .	58
X. Finite Size Effects for Interfacial Free Energy .. .. .	62
Acknowledgements .. .. .	68
References .. .. .	69

## 2. Field-theoretic Approach to Critical Behaviour at Surfaces

H. W. DIEHL

I. Introduction .. .. .	76
II. Background, Basic Concepts and Definitions .. .. .	83
III. Renormalization Group for the Semi-infinite $n$ -Vector Model .. .. .	116
IV. Extensions of the Theory and Related Topics .. .. .	226
V. Conclusion—Summary and Outlook .. .. .	256
Acknowledgements .. .. .	259
Appendix .. .. .	259
References .. .. .	260

**3. Renormalization Group Theory of Interfaces**

DAVID JASNOW

I. Introduction	.. .. .	270
II. Renormalization Group Background	.. .. .	276
III. Capillary Waves	.. .. .	286
IV. Renormalization Group Studies	.. .. .	297
V. The Low-temperature Approach	.. .. .	336
VI. Interface Dynamics Near Equilibrium	.. .. .	342
VII. Concluding Remarks	.. .. .	357
Acknowledgements	.. .. .	358
References	.. .. .	359