

Contents

LIST OF CONTRIBUTORS	vii
PREFACE	ix
CONTENTS OF PREVIOUS VOLUMES	xi

Solution Thermodynamics

Rex B. McLellan

I. Introduction	2
II. Formal Relations for Solutions	3
III. Phase Relations	12
IV. Models for Solid Solutions	16
V. Models for Liquid Solutions	33
VI. Hydrogen-Metal Solutions	36
References	41

Radiation Studies of Materials Using Color Centers

W. A. Sibley and Derek Pooley

I. Introduction	46
II. The Physics of Color Centers	48
III. Radiation Damage in Insulators	80
IV. Applications of Color Centers	109
References	123

Four Basic Types of Metal Fatigue*W. A. Wood*

I. The Fatigue Problem	129
II. Experimental Study	136
III. Concluding Survey	176
References	178

The Relationship between Atomic Order and the Mechanical Properties of Alloys*M. J. Marcinkowski*

I. Introduction	181
II. The Nature of Dislocations in Ordered Alloys	182
III. Effect of Atomic Order on Flow Stress	203
IV. Relationship between Twinning, Fracture, and Atomic Ordering	261
V. Effects of Atomic Order on Fatigue and Creep Behavior	276
VI. Summary and Conclusions	280
References	281

SUBJECT INDEX	289
---------------	-----