

Contents

FOREWORD	vii
PREFACE	ix
CONTENTS OF PREVIOUS VOLUMES	xi
Chapter I. Introduction	1
Chapter II. Linear Elastic Waves	
I. Theory	3
A. Wave Speeds and Particle Displacements	3
B. Energy Flux	8
C. Isotropic Solids	11
D. Cubic Crystals	17
E. Optical Visualization of Ultrasonic Waves	34
F. Survey of Theoretical Literature	38
II. Measurement of Linear Elastic Properties	42
A. General Considerations	42
B. Orientation Determination of Crystals	42
C. Second-Order Elastic Constants	49
D. Texture of Polycrystalline Aggregates	52
E. Nondestructive Testing	70
Chapter III. Nonlinear Elastic Waves	
I. Theory	73
A. Eulerian and Lagrangian Formulations	74
B. Isotropic Solids	76
C. Cubic Crystals	94
D. Survey of Theoretical Literature	112
II. Measurement of Nonlinear Elastic Properties	126
Chapter IV. Energy Loss from Elastic Waves (Ultrasonic Attenuation)	
I. Geometrical Effects	145
A. Reflection and Refraction	145

B. Waveguide Effects	146
C. Diffraction Spread	147
II. Intrinsic Effects	147
A. Nonmechanical Effects	149
B. Mechanical Effects	149
References	152
AUTHOR INDEX	161
SUBJECT INDEX	165