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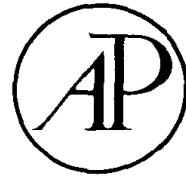
Ultrasonics

Edited by

PETER D. EDMONDS

*Bioengineering Research Center
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ULTRASONICS

METHODS OF EXPERIMENTAL PHYSICS:

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FOREWORD

This volume, edited by Dr. Peter Edmonds, is the first of the Methods to be devoted to acoustics. Future volumes will deal with the more classical aspects of acoustics, a field that has been adopted by our colleagues in engineering as well.

Ultrasonics plays many roles, ranging from physical and bioengineering applications to the study of the fundamental properties of materials. Dr. Edmonds and his contributors cover these areas in a manner that should make this volume a definitive reference work on the subject. We expect that researchers in a given specialization will find much useful information and have their imaginations stimulated by going through the book as a whole.

L. MARTON
C. MARTON

PREFACE

This volume offers detailed and comprehensive treatments of a number of important topics in the broad field of ultrasonics. It is intended to serve the needs of graduate students and also of specialists in other fields who may desire an assessment of the capabilities of ultrasonics as a technique with the potential for solving specific problems.

Ultrasonics interfaces with many fields, including optics, low temperature and solid state physics, chemical kinetics, cavitation, viscoelasticity, lubrication, nondestructive evaluation, medical diagnostic imaging, signal processing, and materials processing. The authors of one or more of the following parts discuss these fields. However, other important topics have been omitted, e.g., ultrasonics in gaseous media, plasma- and magneto-acoustics, and phonon phenomena in general. Ultrasonic scattering in noncrystalline media proved to be insufficiently developed for treatment in this treatise. (Seekers of information on these topics should consult the excellent treatise "Physical Acoustics," edited by W. P. Mason and R. N. Thurston, published by Academic Press.)

I wish to thank all authors for their cooperation and hard work in writing and many supplementary tasks. The essential contributions made by the secretarial assistants to the authors and by their institutions are also acknowledged.

I am grateful to several anonymous reviewers of parts of this volume, whose excellent advice has been freely given and usually heeded. Valuable support provided by the management and staff of SRI International is acknowledged with thanks.

All who have contributed to this volume profoundly regret that one of its editors-in-chief, Dr. Ladislaus Marton, did not live to see its publication. In his absence, the functions of editor-in-chief have been admirably fulfilled by Mrs. Claire Marton.

PETER D. EDMONDS

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