

Preface

This book presents the latest and complete information about piezoelectric electro-acoustic transducers.

Electro-acoustic transducer (EAT) is a device which transforms electrical energy to energy of acoustic fluctuations. Principles of action, the designs of known transducers for work in air, water, for nondestructive control are described in the book. These transducers are based on back piezoelectric effects that are used in electro-acoustics, the hydroacoustics, and nondestructive control.

Offered to «Springer» the book consists of five semantic (sense, meaning) parts:

The general information about PEAT, terms and definitions, materials, the description of piezoelements, etc.

The description of known designs PEAT for work in air, water, and with firm bodies.

New methods and devices electrophysical and circuit engineering designing (synthesis, creation) of piezoelectric electro-acoustic transducers and sensors are described. Application of these methods allows to create from one piezoelement tens (!) variants of transducers and sensors of the given type with various, including, improved characteristics.

New methods and devices for improvement of characteristics PEAT are described: reduction of working frequency that is equivalent to increase range of action (range of detection of sea objects), increases in sound pressure and pass-band expansion (for underwater communication), etc. These methods allow to create transducers with unique properties.

This book is written not only for specialists in electro-acoustics, hydroacoustics, nondestructive control, measuring technique, sensors for automatic control, but also for graduate students.

The authors are thankful to Senior Editor Springer Dr. Claus Ascheron for the qualified consideration of the manuscript, benevolent support of authors, and patience at work with them.

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Piezo-Electric Electro-Acoustic Transducers

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2014, IX, 230 p. 255 illus., 9 illus. in color., Hardcover

ISBN: 978-3-319-01197-4