

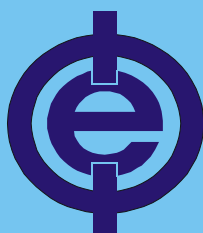
**University of Niš**  
**Faculty of Electronics**

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**Milan Đ. Radmanović, Dragan D. Mančić**

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**DESIGNING AND MODELLING OF  
THE POWER ULTRASONIC  
TRANSDUCERS**



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***Edition: Monographies***



**MPI** Interconsulting

ULTRASONICS - SONOCHEMISTRY - INNOVATION

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**Dr. Milan Đ. Radmanović, Dr. Dragan D. Mančić**

# **DESIGN AND MODELING OF THE POWER ULTRASONIC TRANSDUCERS**

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## **PREFACE**

*Field of power ultrasonic technique, which represents an important field of industrial electronics, in recent two decades experienced very swift and dynamic development. An intensive development concerns as design and construction of new ultrasonic devices, as well as broadening of application fields of power ultrasound in many industrial branches and processes (mechanical, electric, and chemical industry). Aside with appearing of new applications of ultrasound, new, more perfect sandwich transducers are designed and developed, and numerous scientific papers appeared, in which are treated different aspects of power ultrasonic technique, especially different electromechanical models by which is obtained design and optimization of ultrasonic transducers.*

*In this monograph firstly is performed systematization of different existing procedures and methods for modeling of power ultrasonic transducers. Besides that, new procedures of modeling, design, and optimization of power ultrasonic transducers are presented, based on previously realized original models of piezoceramic and metal rings. Thus is completed design of a sandwich transducer as a unique system, consisted of piezoceramic rings, emitting and reflecting metal ending, as well as of central bolt. Basic idea of the authors was to help with realized models to the designers of new ultrasonic systems, due to the fact that currently there is no literature from this field in Serbian.*

*Original results, presented in this monograph, are product of several-year-research in the field of power ultrasound in the Laboratory for energetic electronics and control of electroenergetic transducers in the Faculty of Electronics in Niš, wherefrom originated over 50 scientific papers from this field. Concrete results, presented here, are part of one master thesis and one doctoral dissertation, realized in the frame of research in this field.*

*On this occasion authors express their gratitude to the reviewers, Prof Vanča Litovski, Ph.D. and Prof Stojan Ristić, Ph.D. on their useful suggestions and notes.*

*Niš, January 2004*

*Authors*

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