
Ultrasonic Motors Theory And Applications

Artificial-Intelligence-based Electrical Machines and Drives
Mechatronic Systems Design
Advancements in Electric Machines
Powders and Grains 2005, Two Volume Set
Technologies and Applications
Optical Coherence Tomography in Cardiovascular Research
Smart Structures Theory
Proceedings of VETOMAC X 2014, held at the University of Manchester, UK,
September 9-11, 2014
Expectations and Fears About Emerging Intelligent, Humanlike Machines
Ultrasonic Motors
Acoustic Waves
Modern Electric Vehicle Technology
Haptics: Neuroscience, Devices, Modeling, and Applications
9th International Conference, EuroHaptics 2014, Versailles, France, June 24-26,
2014, Proceedings, Part I
Piezoelectric Actuators and Ultrasonic Motors
Wide-Gap Luminescent Materials: Theory and Applications
Applications of High-Intensity Ultrasound
Application of Fuzzy, Neural, Fuzzy-neural, and Genetic-algorithm-based Techniques
The Coming Robot Revolution
The Mechatronics Handbook - 2 Volume Set
Electromagnetic Fields in Mechatronics, Electrical and Electronic Engineering
Advanced Theory, Analysis, and Tools
Proceedings of the IUTAM Symposium on Recent Advances of Acoustic Waves in
Solids, Taipei, Taiwan, May 25-28, 2009
Proceedings of ISEF'05
FEM and Micromechatronics with ATILA Software
Emboding Intelligence in Structures and Integrated Systems
Mechanical and Aerospace Engineering, ICMAE2011
Theory and Applications
Proceedings of the 6th Italian Conference
Vector Control and Dynamics of AC Drives
Proceedings of the International Conference on Powders & Grains 2005, Stuttgart,
Germany, 18-22 July 2005
Ultrasonic Surface Micromachine Actuation Applications to Release, Microstructure
Assembly, and Micromotors
Applied Mechanics and Manufacturing Technology
Ultrasonic Motors
Piezoelectric Materials: Advances in Science, Technology and Applications

IUTAM Symposium on Recent Advances of Acoustic Waves in Solids
14th International Conference, ICIRA 2021, Yantai, China, October 22–25, 2021,
Proceedings, Part II
Power Ultrasonics
Permanent-Magnet DC Linear Motors
Fundamentals and Modeling

Ultrasonic
Motors Theory
And
Applications

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Artificial-Intelligence- based Electrical Machines and Drives

Springer Science &
Business Media

The industrial interest in ultrasonic processing has revived during recent years because ultrasonic technology may represent a flexible “green alternative for more energy efficient processes. A challenge in the application of high-intensity ultrasound to industrial processing is the design and development of specific power ultrasonic systems for large scale operation. In the area of ultrasonic processing in fluid and multiphase media the development of a new family of power generators with extensive radiating surfaces has significantly contributed to the implementation at industrial scale of several applications in sectors such as the food industry, environment, and

manufacturing. Part one covers fundamentals of nonlinear propagation of ultrasonic waves in fluids and solids. It also discusses the materials and designs of power ultrasonic transducers and devices. Part two looks at applications of high power ultrasound in materials engineering and mechanical engineering, food processing technology, environmental monitoring and remediation and industrial and chemical processing (including pharmaceuticals), medicine and biotechnology. Covers the fundamentals of nonlinear propagation of ultrasonic waves in fluids and solids. Discusses the materials and designs of power ultrasonic transducers and devices. Considers state-of-the-art power sonic applications across a wide range of industries.

**Mechatronic Systems
Design** Springer Science
& Business Media

This volume contains the proceedings of the Fifth International Conference on the Micromechanics of

Granular Media, Powders and Grains 2005. Powders and Grains is an international scientific conference held every 4 years that brings together engineers and physicists interested in the micromechanics of granular media. The book is a guide to the hotte *Advancements in Electric Machines* Springer Nature The 4-volume set LNAI 13013 - 13016 constitutes the proceedings of the 14th International Conference on Intelligent Robotics and Applications, ICIRA 2021, which took place in Yantai, China, during October 22-25, 2021. The 299 papers included in these proceedings were carefully reviewed and selected from 386 submissions. They were organized in topical sections as follows: Robotics dexterous manipulation; sensors, actuators, and controllers for soft and hybrid robots; cable-driven parallel robot; human-centered wearable robotics; hybrid system modeling and human-machine interface;

robot manipulation skills learning; micro_nano materials, devices, and systems for biomedical applications; actuating, sensing, control, and instrumentation for ultra-precision engineering; human-robot collaboration; robotic machining; medical robot; machine intelligence for human motion analytics; human-robot interaction for service robots; novel mechanisms, robots and applications; space robot and on-orbit service; neural learning enhanced motion planning and control for human robot interaction; medical engineering.

Powders and Grains 2005, Two Volume Set CRC Press

Students preparing to work with mechatronics, particularly with highly precise and smart actuators, face the challenge of designing and analyzing devices without formal and practical guidance in computer techniques. Finally there is a textbook that is as practical as it is authoritative: Kenji Uchino's FEM and Micromechatronics with ATILA Software. Ideal for Today's Computer-Based Curricula Every aspect of this book reflects its focus on being easy to use,

easy to teach from, and above all, easy to implement. The first half of the text outlines the theory needed to develop and design smart actuators and transducers, while the second half walks students step-by-step through the software implementation using seven extensive examples. Even the book's lay-flat binding makes it easy for students to follow the text while working simultaneously at a computer. The companion CD-ROM supplies a free educational version of ATILA-Light. Unified Coverage for Integrated Technologies Covering the myriad challenges posed by smart transducers, the author introduces the fundamentals of piezoelectric and magnetostrictive devices, practical materials, device designs, drive and control techniques, and typical applications. Numerous problems and examples give students ample opportunity to put the concepts into practice. Outlining a complete treatment in 30 convenient 75 minute lessons, FEM and Micromechatronics with ATILA Software is a unique classroom text

that students will continue to use throughout their entire careers.

Technologies and Applications Trans Tech Publications Ltd

A comprehensive tutorial on ultrasonic motors for practicing engineers, researchers and graduate students. "Ultrasonic Motors: Technologies and Applications" describes the operating mechanism, electromechanical coupling models, optimization design of structural parameters, testing methods, and drive/control techniques of various ultrasonic motors and their applications. Dr. Chunsheng Zhao is a professor at Nanjing University of Aeronautics and Astronautics (NUAA) where he is Director of the Precision Driving Laboratory at NUAA. He is a member of the Chinese Academy of Science, and holds 54 patents in China and published more than 400 papers in the field of piezoelectric ultrasonic motors.

Optical Coherence Tomography in Cardiovascular Research Taylor & Francis

This book provides a completely up-to-date survey of the many different types of ultrasonic motors

currently in use. These motors, which use ultrasonic vibrations to produce a frictional driving force, have many attractive features, including simple structures which can easily be miniaturized, large power to weight ratios, high torque at low speed, high precision due to low inertia and easy electronic control, and no associated magnetic field. With such advantages, they are increasingly displacing conventional electromagnetic motors in robot actuators, camera autofocus mechanisms, and aerospace devices, to name a few examples. Written by leading experts on the subject, the book introduces the reader to the design and manufacture of the motor as well as to techniques for evaluating motor performance. It will be an invaluable guide to electrical engineering researchers, designers, and manufacturers.

Smart Structures

Theory Springer
Intelligent Materials and Structures provides exceptional insights into designing intelligent materials and structures for special applications in engineering. The author introduces the fundamental materials

science involved in research endeavors and simultaneously reviews the current state-of-the-art of intelligent materials and structures. Separate chapters are devoted to the thorough examination of theory and application of laminated composite materials, Piezoelectricity, Shape Memory Alloys, Electro- and Magnetorheological fluids as well as Magneto- and Electrostrictive materials. Each chapter contains numerous equations and figures describing theories, models and behavior of the intelligent material discussed. Special attention is paid to applications of intelligent materials to various structures in the aerospace and medical sector, piezoelectric motors as well as piezoelectric and electromagnetic energy harvesting. Contents: Introduction to Intelligent Materials and Structures Laminated Composite Materials Piezoelectricity Shape Memory Alloys Electrorheological and Magnetorheological Fluids Magnetostrictive and Electrostrictive Materials Applications of Intelligent Materials in Structures Energy Harvesting using Intelligent Materials Index
Proceedings of VETOMAC

X 2014, held at the University of Manchester, UK, September 9-11, 2014
Cambridge University Press

The VETOMAC-X Conference covered a holistic plethora of relevant topics in vibration and engineering technology including condition monitoring, machinery and structural dynamics, rotor dynamics, experimental techniques, finite element model updating, industrial case studies, vibration control and energy harvesting, and signal processing. These proceedings contain not only all of the nearly one-hundred peer-reviewed presentations from authors representing more than twenty countries, but also include six invited lectures from renowned experts: Professor K. Gupta, Mr W. Hahn, Professor A.W. Lees, Professor John Mottershead, Professor J.S. Rao, and Dr P. Russhard. This work is of interest to researchers and practitioners alike, and is an essential book for most of libraries of higher academic institutes.

Expectations and Fears About Emerging Intelligent, Humanlike Machines CRC Press
The collection includes

selected, peer reviewed papers from the 2012 International Conference on Mechatronics and Computational Mechanics (ICMCM 2012), 20-21st December, 2012, Dubai, UAE. Volume is indexed by Thomson Reuters CPCI-S (WoS). The papers are grouped as follows: Chapter 1: Mechatronics and Control; Chapter 2: Applied Mechanics and Mechanical Engineering; Chapter 3: Applied Materials Engineering; Chapter 4: Organization of Manufacture, Engineering Management and Information Technologies. Ultrasonic Motors Oxford University Press

This volume presents current research and development in the fields of sensors and microsystems. Many aspects of disciplines related to sensors and microsystems are covered, ranging from materials science to complete applications and multifunctional systems. The variety of the topics and the quality of the papers offer readers an insight into the research status in Italy. The book contains selected contributions from 37 institutions in Italy — both academic institutions and public/private research institutions.

Contents: Biosensors and Bioelectronics: Surface Plasmon Resonance (SPR) Biosensor for Genetically Modified Organisms (GMOs) Detection (E Mariotti et al.) DNA Biosensor for the Detection of Toxicants in Water and Wastewater Samples (F Lucarelli et al.) Chemical Sensors Based on Organic Materials and Conducting Polymers: Self-Assembled Dipyrromethane Thin Films: SERS Characterization and Application in Methanol Vapours Recognition Through SPR Technique (S Conoci et al.) Chemical Sensors Based on Inorganic Materials: Mixed Oxides SnO₂-MoO₃ Thin Films for Selective Gas Sensing (E Zampiceni et al.) Gas Sensing Properties of Sol-Gel Fabricated Mixed Oxide MoO₃-WO₃ Films (K Galatsis et al.) Electronic Nose and Multisensor Systems: Olfactory Characterisation of Car Cabin Using the Libra Nose (C Malvicino et al.) Fiber Optics and IR Sensors: A Fiber Optic Polar Nephelometer for Suspended Particle Characterization (A G Mignani et al.) Physical Sensors: Wearable Thermo- and Piezo-Resistive Sensors:

Realization and Properties (E P Scilingo et al.) Micromechanical Systems: Microelectronics and Microsystems: Non-Electronic Components into an Electronic System (U Mastromatteo) Sensor Technology: High Frequency Surface Acoustic Wave Resonators on Silicon (C Caliendo & E Verona) Electronics for Sensors: An Alternative Read-out of Thickness Shear Mode Resonator Based Chemical Sensors in Liquid and Gaseous Samples (C Di Natale et al.) and other papers

Readership: Researchers in surface science, polymer science, analytical chemistry, electrical & electronic engineering, and materials engineering.

Keywords: *Acoustic Waves* World Scientific

The two-volume set LNCS 8618 and 8619 constitutes the refereed proceedings of the 9th International Conference EuroHaptics 2014, held in Versailles, France, in June 2014. The 118 papers (36 oral presentations and 82 poster presentations) presented were carefully reviewed and selected from 183 submissions. Furthermore, 27 demos were exhibited, each of them resulting in a short

paper included in the volumes. These proceedings reflect the multidisciplinary nature of EuroHaptics and cover topics such as human-computer interaction, human-robot interactions, neuroscience, perception and psychophysics, biomechanics and motor control, modelling and simulation; and a broad range of applications in medicine, rehabilitation, art, and design.

Modern Electric Vehicle Technology Oxford

University Press

Presents current research and development in the fields of sensors and microsystems.

Haptics: Neuroscience, Devices, Modeling, and Applications Springer

Science & Business Media
A collection of 86 peer-reviewed papers offering an up-to-date overview of the topic of, "Embodying Intelligence in Structures and Integrated Systems". The papers are grouped into chapters on: 1: Smart materials, sensors/actuators and microsystems; 2: Integration technologies; 3: Smart structures and integrated systems; 4: Structural monitoring; 5: Ongoing and perspective applications. This special volume has also been published online in the

series, "Advances in Science and Technology" Vol. 56.

9th International Conference, EuroHaptics 2014, Versailles, France, June 24-26, 2014, Proceedings, Part I Trans

Tech Publications Ltd

The urgent need to keep pace with the accelerating globalization of manufacturing in the 21st century has produced rapid advancements in manufacturing technology, research and expertise. This book presents the proceedings of the 14th International Conference on Manufacturing Research (ICMR 2016), entitled Advances in Manufacturing Technology XXX. The conference also incorporated the 31st National Conference on Manufacturing Research, and was held at Loughborough University, Loughborough, UK, in September 2016. The ICMR conference is renowned as a friendly and inclusive environment which brings together a broad community of researchers who share the common goal of developing and managing the technologies and operations key to sustaining the success of manufacturing businesses. The

proceedings is divided into 14 sections, including: Manufacturing Processes; Additive Manufacturing; Manufacturing Materials; Advanced Manufacturing Technology; Product Design and Development, as well as many other aspects of manufacturing management and innovation. It contains 92 papers, which represents an acceptance rate of 75%. With its comprehensive overview of current developments, this book will be of interest to all those involved in manufacturing today.

Piezoelectric Actuators and Ultrasonic Motors

Oxford University Press on Demand

Traditionally, electrical machines are classified into d. c. commutator (brushed) machines, induction (asynchronous) machines and synchronous machines. These three types of electrical machines are still regarded in many academic curricula as fundamental types, despite that d. c. brushed machines (except small machines) have been gradually abandoned and PM brushless machines (PMBM) and switched reluctance machines (SRM) have been in mass

production and use for at least two decades. Recently, new topologies of high torque density motors, high speed motors, integrated motor drives and special motors have been developed. Progress in electric machines technology is stimulated by new materials, new areas of applications, impact of power electronics, need for energy saving and new technological challenges. The development of electric machines in the next few years will mostly be stimulated by computer hardware, residential and public applications and transportation systems (land, sea and air). At many Universities teaching and research strategy oriented towards electrical machinery is not up to date and has not been changed in some countries almost since the end of the WWII. In spite of many excellent academic research achievements, the academia-industry collaboration and technology transfer are underestimated or, quite often, neglected. Underestimation of the role of industry, unfamiliarity with new trends and restraint from technology transfer results, with time, in lack

of external financial support and drastic decline in the number of students interested in Power Electrical Engineering. *Wide-Gap Luminescent Materials: Theory and Applications* IOS Press Ultrasonic Motors Theory and Applications Oxford University Press on Demand [Applications of High-Intensity Ultrasound](#) IOS Press Continued advances in power electronics and computer control technology make possible the implementation of a.c. drive systems in place of d.c. The a.c. systems are usually more efficient, and more reliable, more controllable and require a cheaper motor construction. These are strong commercial reasons driving change. The disadvantage is a degree of complexity in the drive control system; this book explains that complexity.

Application of Fuzzy, Neural, Fuzzy-neural, and Genetic-algorithm-based Techniques

Springer Science & Business Media Demands for high-performance micro/nano manipulations, from the manufacture of microelectronic and photonic devices,

biomedical apparatus, nanoscience and nanotechnology, renewable energy, environment protection, and high-end appliances, have been rapidly increasing in recent years. However, there are very few books on ultrasonic manipulation technology, which is one of the important means in micro/nano manipulations. This unique title gives the basic physical principles of ultrasonic micro/nano manipulations, and highlights methods of implementing these principles. The nonlinear effects of ultrasound are described in details after piezoelectric transduction and acoustic field are introduced and discussed. Numerous important examples are given in this book, to help readers better understand the applications of these principles and characteristics of ultrasonic manipulators utilizing these principles. The examples cover the manipulations of micro solids, nanoscale entities, droplets and microfluid. This indispensable book will contribute positively to the development and application of micro/nano manipulation technology.

The Coming Robot Revolution Trans Tech Publications Ltd
More and more researchers engage into investigation of electromagnetic applications, especially these connected with mechatronics, information technologies, medicine, biology and material sciences. It is readily seen when looking at the content of the book that computational techniques, which were under development during the last three decades and are still being developed, serve as good tools for discovering new electromagnetic phenomena. It means that the field of computational electromagnetics belongs to an application area rather than to a research area. This publication aims at joining theory and practice, thus the majority of papers are deeply rooted in engineering problems, being simultaneously of high theoretical level. The editors hope to touch the heart of the matter in

electromagnetism. The book focuses on the following issues:
Computational Electromagnetics; Electromagnetic Engineering; Coupled Field and Special Applications; Micro- and Special Devices; Bioelectromagnetics and Electromagnetic Hazard; and Magnetic Material Modeling.

The Mechatronics Handbook - 2 Volume Set
IOS Press

Rapid growth of the mobile communication market has triggered extensive research on the bulk as well as surface acoustic wave devices in the last decade. Quite a few important results on the modeling and simulation of Film Bulk Acoustic Resonator (FBAR) and Layered SAW devices were reported recently. The other recent advance of acoustic waves in solids is the so-called phononic crystals or phononic band-gap materials. Analogous to the band-gap of light in

photonic crystals, acoustic waves in periodic elastic structures also exhibit band-gap. Important applications of phononic band gap materials can potentially be found with creating a vibration free environment in microstructures, and design of advanced acoustic frequency filter, etc. In addition to the wave electronics and phononic crystals, to facilitate the emerging needs in the quantitative nondestructive evaluation of materials, waves in anisotropic solids and/or electro-, magneto-interaction problems also regained much attention recently. Topics treated include: Waves in piezoelectric crystals; Simulation of advanced BAW and SAW devices; Analysis of band gaps in phononic structures; Experimental investigation of phononic structures; Waves in multilayered media; Waves in anisotropic solids and/or electro-, magneto-interaction problems.

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