

**MRS SYMPOSIUM PROCEEDINGS**

Volume 720 • 2002 MRS Meeting

# Materials Issues for Tunable RF and Microwave Devices III

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# Materials Issues For Tunable Rf And Microwave Devices

## Iii

**K. M. Nair,Amar S. Bhalla,S.-I. Hirano**

### **Materials Issues For Tunable Rf And Microwave Devices Iii:**

Materials Issues for Tunable RF and Microwave Devices III: Volume 720 Steven C. Tidrow, 2002-08-09 Challenges facing the implementation of an affordable tunable RF and microwave device technology are discussed in these papers from an April 2002 meeting Materials issues and devices are examined with information on new tunable materials issues of preparation and optimization of bulk and thin film properties material and surface characterization evaluation of material loss and loss mechanisms and effects of microstructure At the device level phase shifters are discussed and a new device concept for variable true time delay versus phase shift is introduced At the system level a paraelectric lens is used to demonstrate electronic beam steering of an antenna Tidrow is affiliated with the US Army Research Laboratory Annotation copyrighted by Book News Inc Portland OR *Materials Issues for Tunable RF and Microwave Devices III: Steven C. Tidrow, James S. Horwitz, Xiaoxing Xi, Jeremy Levy, 2002-08-09* This book first published in 2002 discusses challenges facing the implementation of an affordable tunable RF and microwave device technology Low cost tunable microwave devices will have a tremendous impact on a variety of commercial and military systems including tunable band select filters for wireless communications phase shifters and true time delay devices for electronic scanning antennas tunable radiating structures for frequency hopping and tunable transformers to reduce RF impedance mismatch Papers address topics from materials issues through devices and even a system level demonstration of electronic beam steering Specific materials issues discussed include new tunable materials issues of tunability preparation and optimization of bulk and thin film properties materials surface and interface characterization evaluation of material loss and loss mechanisms effects of microstructure and temperature stability Phase shifters are featured and a new device concept for variable true time delay versus phase shift is introduced A paraelectric lens is used to demonstrate electronic beam steering of an antenna at 10 GHz with about 2 dB of loss Materials Issues for Tunable RF and Microwave Devices II Steven C. Tidrow, Materials Research Society. Fall Meeting Symposium DD., 2000\* **Symposium H: Materials Issues for Tunable RF and Microwave Devices III.**, 2002 The purpose of the symposium was to bring together researchers from a broad range of disciplines to discuss the challenges facing the implementation of an affordable tunable RF and microwave device technology Low cost tunable microwave devices will have a tremendous impact on a variety of commercial and military systems including but not limited to tunable band select filters for wireless communications phase shifters and true time delay devices for electronic scanning antennas tunable radiating structures for frequency hopping and tunable transformers to reduce RF impedance mismatch *Advanced Dielectric, Piezoelectric and Ferroelectric Thin Films* Bruce A. Tuttle, Chonglin Chen, Quanxi Jia, R. Ramesh, 2012-04-17 Advances in synthesis and characterization of dielectric piezoelectric and ferroelectric thin films are included in this volume Dielectric piezoelectric and ferroelectric thin films have a tremendous impact on a variety of commercial and military systems including tunable microwave devices memories MEMS devices actuators and sensors Recent work on piezoelectric

characterization AFE to FE dielectric phase transformation dielectrics solution and vapor deposited thin films and materials integration are among the topics included Novel approaches to nanostructuring characterization of material properties and physical responses at the nanoscale also is included **Materials Research Society Symposium Proceedings; Volume 720. Materials Issues for Tunable RF and Microwave Devices III Held in San Francisco, California on April 2-3, 2002**, 2002 The purpose of this symposium was to bring together researchers from a broad range of disciplines to discuss the challenges facing the implementation of an affordable tunable RF and microwave device technology Low cost tunable microwave devices will have a tremendous impact on a variety of commercial and military systems including but not limited to tunable band select filters for wireless communications phase shifters and true time delay devices for electronic scanning antennas tunable radiating structures for frequency hopping and tunable transformers to reduce RF impedance mismatch The papers of this proceedings discuss a wide range of topics from materials issues through devices and even a system level demonstration of electronic beam steering Specific materials issues discussed are new tunable materials issues of tunability preparation and optimization of bulk and thin film properties materials surface and interface characterization evaluation of material loss and loss mechanisms effects of microstructure and temperature stability At the device level phase shifters are discussed and a new device concept for variable true time delay versus phase shift is introduced At the system level a paraelectric lens is used to demonstrate electronic beam steering of an antenna at 10 GHz with about 2 dB of loss

**Recent Developments in Electronic Materials and Devices** K. M. Nair, Amar S. Bhalla, S.-I. Hirano, 2012-03-28 With information on the subject of dielectric materials this volume brings important updates to electronic device engineers and researchers in the area of ferroelectric materials Topics include materials processes properties and electronic devices based on these materials and systems Proceedings of the symposium held at the 103rd Annual Meeting of The American Ceramic Society April 22 25 2001 in Indiana Ceramic Transactions Volume 131 **Defect and Impurity Engineered Semiconductors and Devices III: Volume 719** S. Ashok, 2002-08-09 This book focuses on the deliberate introduction and manipulation of defects and impurities in order to engineer desired properties in semiconductor materials and devices In view of current exciting developments in wide bandgap semiconductors like GaN for blue light emission as well as high speed and high temperature electronics dopant and defect issues relevant to these materials are addressed Also featured are semiconductor nanocavities and nano structures with emphasis on the formation and impact of vacancy type defects Defect reaction problems pertaining to impurity gettering precipitation and hydrogen passivation are specific examples of defect engineering that improve the electronic quality of the material A number of papers also deal with characterization techniques needed to study and to identify defects in materials and device structures Finally papers also address issues such as interface control and passivation application of ion implantation plasma treatment and rapid thermal processing for creating activating suppressing trap levels and device applications **Electrical and Electronic Devices, Circuits, and Materials** Suman

Lata Tripathi, Parvej Ahmad Alvi, Umashankar Subramaniam, 2021-03-24 The increasing demand for electronic devices for private and industrial purposes lead designers and researchers to explore new electronic devices and circuits that can perform several tasks efficiently with low IC area and low power consumption In addition the increasing demand for portable devices intensifies the call from industry to design sensor elements an efficient storage cell and large capacity memory elements Several industry related issues have also forced a redesign of basic electronic components for certain specific applications The researchers designers and students working in the area of electronic devices circuits and materials sometimes need standard examples with certain specifications This breakthrough work presents this knowledge of standard electronic device and circuit design analysis including advanced technologies and materials This outstanding new volume presents the basic concepts and fundamentals behind devices circuits and systems It is a valuable reference for the veteran engineer and a learning tool for the student the practicing engineer or an engineer from another field crossing over into electrical engineering It is a must have for any library      Multifunctional Polycrystalline Ferroelectric Materials Lorena

Pardo, Jesús Ricote, 2011-02-14 This book presents selected topics on processing and properties of ferroelectric materials that are currently the focus of attention in scientific and technical research Ferro piezoelectric ceramics are key materials in devices for many applications such as automotive healthcare and non destructive testing As they are polycrystalline non centrosymmetric materials their piezoelectricity is induced by the so called poling process This is based on the principle of polarization reversal by the action of an electric field that characterizes the ferroelectric materials This book was born with the aim of increasing the awareness of the multifunctionality of ferroelectric materials among different communities such as researchers electronic engineers end users and manufacturers working on and with ferro piezoelectric ceramic materials and devices which are based on them The initiative to write this book comes from a well established group of researchers at the Laboratories of Ferroelectric Materials Materials Science Institute of Madrid ICMN CSIC This group has been working in different areas concerning thin films and bulk ceramic materials since the mid 1980s It is a partner of the Network of Excellence on Multifunctional and Integrated Piezoelectric Devices MIND of the EC in which the European Institute of Piezoelectric Materials and Devices has its origin      **Materials Issues for Tunable RF and Microwave Devices** ,2002

**Pulsed Laser Deposition of Thin Films** Robert Eason, 2007-12-14 Edited by major contributors to the field this text summarizes current or newly emerging pulsed laser deposition application areas It spans the field of optical devices electronic materials sensors and actuators biomaterials and organic polymers Every scientist technologist and development engineer who has a need to grow and pattern to apply and use thin film materials will regard this book as a must have resource      *Artificial Transmission Lines for RF and Microwave Applications* Ferran Martín, 2015-07-13 This book presents

and discusses alternatives to ordinary transmission lines for the design and implementation of advanced RF microwave components in planar technology This book is devoted to the analysis study and applications of artificial transmission lines

mostly implemented by means of a host line conveniently modified e.g. with modulation of transverse dimensions with etched patterns in the metallic layers etc. or with reactive loading in order to achieve novel device functionalities superior performance and/or reduced size. The author begins with an introductory chapter dedicated to the fundamentals of planar transmission lines. Chapter 2 is focused on artificial transmission lines based on periodic structures including non-uniform transmission lines and reactively loaded lines and provides a comprehensive analysis of the coupled mode theory. Chapters 3 and 4 are dedicated to artificial transmission lines inspired by metamaterials or based on metamaterial concepts. These chapters include the main practical implementations of such lines and their circuit models and a wide overview of their RF/microwave applications including passive and active circuits and antennas. Chapter 5 focuses on reconfigurable devices based on tunable artificial lines and on non-linear transmission lines. The chapter also introduces several materials and components to achieve tuning including diode varactors, RF MEMS, ferroelectrics and liquid crystals. Finally, Chapter 6 covers other advanced transmission lines and wave guiding structures such as electroinductive, magnetoinductive wave lines, common mode suppressed balanced lines, lattice network artificial lines and substrate integrated waveguides. *Artificial Transmission Lines for RF and Microwave Applications* provides an in-depth analysis and discussion of artificial transmission lines including design guidelines that can be useful to researchers, engineers and students. *Materials for Energy Storage, Generation and Transport: Volume 730* Ricardo B. Schwarz, Gerbrand Ceder, Steven A. Ringel, 2002-11-27. The MRS Symposium Proceedings series is an internationally recognised reference suitable for researchers and practitioners.

**Complex Mediums**, 2001      **Electronics on Unconventional Substrates - Electrotextiles and Giant-Area Flexible Circuits: Volume 736** Michael Shur, Patricia M. Wilson, Dick Urban, 2003-04-10. Progress in microelectronics has been associated with reducing the minimum feature size of integrated circuits. However, this trend seems to be ending. The minimum device feature size is now approaching dimensions comparable to molecular and atomic sizes and the ability to scale down is rapidly reaching the point of diminishing returns. New frontiers of microelectronics lie in supplementing conventional silicon chips with new materials and approaches that allow for cheap microelectronic and nanoelectronic devices and circuits on unconventional flexible giant substrates. Giant electronics on flexible substrates will enable numerous applications from electrotextiles to flexible displays, from thin film batteries to novel photovoltaic devices and from sensitive skin for robotics and medical applications to antiterrorist systems built into smart, safe and environmentally friendly buildings. This book deals with this new and potentially disruptive technology. Future concerns include the development of reliable low temperature deposition technology for depositing semiconducting films on a variety of unconventional substrates and the development of flexible stretchable metal and transparent metal films and the demonstration of semiconductor heterostructures on threads and cloth. **Directory of Published Proceedings**, 2002      Ferroelectrics Mickaël Lallart, 2011-08-24. Ferroelectric materials have been and still are widely used in many applications that have moved from

sonar towards breakthrough technologies such as memories or optical devices This book is a part of a four volume collection covering material aspects physical effects characterization and modeling and applications and focuses on ways to obtain high quality materials exhibiting large ferroelectric activity The book covers the aspect of material synthesis and growth doping and composites lead free devices and thin film synthesis The aim of this book is to provide an up to date review of recent scientific findings and recent advances in the field of ferroelectric materials allowing a deep understanding of the material aspects of ferroelectricity **American Book Publishing Record** ,2003 **Gate Stack and Silicide Issues in Silicon:**

**Volume 670** S. A. Campbell,2002-02-26 The MRS Symposium Proceeding series is an internationally recognised reference suitable for researchers and practitioners This volume was first published in 2002

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