

Ferroelectrics in Microwave Devices, Circuits and Systems: Physics, Modeling, Fabrication and Measurements (Engineering Materials and Processes)

By Spartak Gevorgian

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Today’s wireless communications and information systems are heavily based on microwave technology. Current trends indicate that in the future along with - crowaves, the millimeter wave and Terahertz technologies will be used to meet the growing bandwidth and overall performance requirements. Moreover, motivated by the needs of the society, new industry sectors are gaining ground; such as wi- less sensor networks, safety and security systems, automotive, medical, envir- mental/food monitoring, radio tags etc. Furthermore, the progress and the pr- lems in the modern society indicate that in the future these systems have to be more user/consumer friendly, i. e. adaptable, reconfigurable and cost effective. The mobile phone is a typical example which today is much more than just a phone; it includes a range of new functionalities such as Internet, GPS, TV, etc. To handle, in a cost effective way, all available and new future standards, the growing n- ber of the channels and bandwidth both the mobile handsets and the associated systems have to be agile (adaptable/reconfigurable). The complex societal needs have initiated considerable activities in the field of cognitive and software defined radios and triggered extensive research in adequate components and technology platforms. To meet the stringent requirements of these systems, especially in ag- ity and cost, new components with enhanced performances and new functionalities are needed. In this sense the components based on ferroelectrics have greater - tential and already are gaining ground.

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Editorial Review

From the Back Cover

Today’s wireless communications and information systems are heavily based on microwave technology, as are an increasing number of other industry sectors. Extensive research has been carried out into the development of new technologies to meet the increasingly complex requirements of such systems. Among these new technologies agile (tuneable, reconfigurable, and adaptable) microwave components based on ferroelectric materials, have great potential and are already gaining ground.

Ferroelectrics in Microwave Devices, Circuits and Systems is an introduction to the field. It explores the emergence of new functionalities and components with enhanced performance that can meet the agility and cost requirements of modern microwave-based systems. The book provides the reader with practical knowledge in a range of areas, including:

• physics,
• fabrication technology,
• methods of design,
• modeling, and
• measurement of ferroelectric components and devices.

Ferroelectrics in Microwave Devices, Circuits and Systems is a useful research tool for both graduate and undergraduate students, as well as designers of microwave devices, circuits, and systems.

The **Engineering Materials and Processes** series focuses on all forms of materials and the processes used to synthesise and formulate them as they relate to the various engineering disciplines. The series deals with a diverse range of materials: ceramics; metals (ferrous and non-ferrous); semiconductors; composites, polymers, biomimetics *etc*. Each monograph in the series is written by a specialist and demonstrates how enhancements in materials and the processes associated with them can improve performance in the field of engineering in which they are used.

About the Author
Spartak Gevorgian obtained his DrSci in Electrical and Electronics Engineering from the Electrotechnical University, St. Petersburg, Russia. He works as a profesor for the Chalmers University of Technology and also part-time for Ericsson AB, Mölndal, Sweden. As well as having been a professor for his former university in St. Petersburg, Spartak Gevorgian has also worked at the Polytechnic Institute, Yerevan, Armenia. He has been the co-ordinator of several EU projects, including NANOSTAR and MELODY.

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