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# Characterization And Modeling Of Digital Circuits

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Electronic Sensor Design Principles

Large-Size AlGaIn/GaN HEMT Large-Signal Electrothermal Characterization and Modeling for Wireless Digital Communications

Characterization and Modeling of Nonlinear Dark Current in Digital Imagers

Development and Applications in a Policy Support Environment

Characterization and Modeling of Crosstalk Noise in Digital Systems and Microwave Applications

Synthesis, Characterization, Processing, Simulation and Recycling

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Characterization and Modeling of the Ozark Aquifer in Southern Greene County, Missouri

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Third International Conference, ICDHM 2011, Held as Part of HCI International 2011, Orlando, FL, USA, July 9-14, 2011, Proceedings

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Synthesis, Modelling and Characterization of 2D Materials and their Heterostructures

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CMOS RF Modeling, Characterization and Applications

23rd International Colloquium Tribology

Proceedings of the International RILEM Symposium Stockholm, June 2013

System Design, Modeling, Characterization and Dealing with Turbulence

Recent Advances in Materials Characterization and Modeling of Pavement Systems

Bituminous Materials Characterization and Modeling

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## ANTON CALEB

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### **Electronic Sensor Design Principles** Springer Science & Business Media

Synthesis, Modelling and Characterization of 2D Materials and Their Heterostructures provides a detailed discussion on the multiscale computational approach surrounding atomic, molecular and atomic-informed continuum models. In addition to a detailed theoretical description, this book provides example problems, sample code/script, and a discussion on how theoretical analysis provides insight into optimal experimental design. Furthermore, the book addresses the growth mechanism of these 2D materials, the formation of defects, and different lattice mismatch and interlayer interactions. Sections cover direct band gap, Raman scattering, extraordinary strong light matter interaction, layer dependent photoluminescence, and other physical properties. Explains multiscale computational techniques, from atomic to continuum scale, covering different time and length scales Provides fundamental theoretical insights, example problems, sample code and exercise problems Outlines major characterization and synthesis methods for different types of 2D materials

Springer Nature

This book is a comprehensive exposition of FET modeling, and is a must-have resource for seasoned professionals and new graduates in the RF and microwave power amplifier design and modeling community. In it, you will find descriptions of characterization and measurement techniques, analysis methods, and the simulator implementation, model verification and validation procedures that are needed to produce a transistor model that can be used with confidence by the circuit designer. Written by semiconductor industry professionals with many years' device modeling experience in LDMOS and III-V technologies, this was the first book to address the modeling requirements specific to high-power RF transistors. A technology-independent approach is described, addressing thermal effects, scaling issues, nonlinear modeling, and in-package matching networks. These are illustrated using the current market-leading high-power RF technology, LDMOS, as well as with III-V power devices.

### **Large-Size AlGaIn/GaN HEMT Large-Signal Electrothermal Characterization and Modeling for Wireless Digital Communications** John Wiley & Sons

ABSTRACT: This dissertation is devoted to the characterization, modeling and simulation of plastic anisotropy and strength differential effects in high-purity, polycrystalline [alpha]-titanium. A series of uniaxial compression and tension tests were carried out at room temperature under quasi-static conditions to quantify the plastic anisotropy and strength differential effects in the material. Pre- and post-test textures were measured using neutron diffraction techniques and orientation imaging microscopy (OIM). The tests indicated that initially both plates have strong basal textures, one of the plates studied (Plate 1) being orthotropic, whereas the other one (Plate 2) has in-plane symmetry. Significant texture evolution associated primarily with tensile twinning was observed only for Plate 1 when subjected to compression in the rolling direction. Four-point bending tests were performed for

validation purposes. Digital Image Correlation techniques were used to obtain the strain field. As a result of the anisotropy and directionality of twinning, qualitative differences were observed between the response of upper and lower fibers in different orientations.

*Characterization and Modeling of Nonlinear Dark Current in Digital Imagers* Cambridge University Press

Recent progress in ICT has exceeded our expectations for meeting the requirement of multimedia society in the 21st century. The FSOC is considered to be one of the key technologies for realizing very high speed multi Gbps large-capacity terrestrial and aerospace communications. In FSOC, the optical beam propagation in the turbulent atmosphere is severely affected by various factors suspended in the channel. Wavefront aberration correcting with continuous beam alignment are the key requirements for a successful installation of an FSOC system which are the main contributions in our book. Establishment of FSOC setups, development of accurate weather station, measurement of atmospheric attenuation (Att) and turbulence strength (Cn2), development of new models to predict the Att and Cn2, design of Response Surface Model and Artificial Neural Network based on controller, implementation of neural-controller in FPGA and attaining the BER of  $6.4 \times 10^{-9}$  during different outdoor environments. All the original contributions, newness, findings and experimental results etc., are reported in the book. Subject of work; Wireless Optical Communication. The content of the book can be referred by various application designers and/or academicians for working on FSOC transceiver design, laser cutting, laser metrology, laser surgery, beam focusing & pointing, beacon positioning and coupling etc. Further, all necessary MATLAB and VHDL codes are also given on appropriate pages for the readers' quick/ clear understanding.

### **Development and Applications in a Policy Support Environment** Springer Science & Business Media

Volume One of this two-volume sequence focuses on the basic characterization of known protein structures, and structure prediction from protein sequence information. Eleven chapters survey of the field, covering key topics in modeling, force fields, classification, computational methods, and structure prediction. Each chapter is a self contained review covering definition of the problem and historical perspective; mathematical formulation; computational methods and algorithms; performance results; existing software; strengths, pitfalls, challenges, and future research.

*Characterization and Modeling of Crosstalk Noise in Digital Systems and Microwave Applications* Woodhead Pub Limited

This textbook is appropriate for use in graduate-level curricula in analog-to-digital conversion, as well as for practicing engineers in need of a state-of-the-art reference on data converters. It discusses various analog-to-digital conversion principles, including sampling, quantization, reference generation, nyquist architectures and sigma-delta modulation. This book presents an overview of the state of the art in this field and focuses on issues of optimizing accuracy and speed, while reducing the power level. This new, third edition emphasizes novel calibration concepts, the specific requirements of new systems, the consequences of 22-nm technology and the need for a more statistical approach to accuracy. Pedagogical enhancements to this edition include additional, new

exercises, solved examples to introduce all key, new concepts and warnings, remarks and hints, from a practitioner's perspective, wherever appropriate. Considerable background information and practical tips, from designing a PCB, to lay-out aspects, to trade-offs on system level, complement the discussion of basic principles, making this book a valuable reference for the experienced engineer.

*Synthesis, Characterization, Processing, Simulation and Recycling* Amer Chemical Society

Fluoropolymers are very unique materials. Since the middle of the twentieth century fluoropolymers have been used in applications where a wide temperature range, a high resistance to aggressive media, excellent tribological characteristics, and specific low adhesion are required. Today, researchers turn to fluoropolymers to solve new challenges and to develop materials with previously unattainable properties. Opportunities for Fluoropolymers: Synthesis, Characterization, Processing, Simulation and Recycling covers recent developments in fluoropolymers, including synthesis of new copolymers, strategies for radical polymerization of fluoromonomers (conventional or controlled; RDRP), and the modification of fluoropolymers to achieve desired material characteristics. This volume in the Progress in Fluorine Science series is ideal for researchers and engineers who want to learn about the synthetic strategies, properties, and recycling of these special polymers, as well as industrial manufacturers who are interested in achieving new product characteristics in their respective industries. Written by a global team of fluoropolymer experts Includes conventional techniques of radical polymerization and more modern controlled polymerization techniques Covers nanocomposites, which are of interest to researchers and industrial manufacturers of fluoropolymers

**Landslides** expert verlag

A comprehensive reference giving a thorough explanation of propagation mechanisms, channel characteristics results, measurement approaches and the modelling of channels Thoroughly covering channel characteristics and parameters, this book provides the knowledge needed to design various wireless systems, such as cellular communication systems, RFID and ad hoc wireless communication systems. It gives a detailed introduction to aspects of channels before presenting the novel estimation and modelling techniques which can be used to achieve accurate models. To systematically guide readers through the topic, the book is organised in three distinct parts. The first part covers the fundamentals of the characterization of propagation channels, including the conventional single-input single-output (SISO) propagation channel characterization as well as its extension to multiple-input multiple-output (MIMO) cases. Part two focuses on channel measurements and channel data post-processing. Wideband channel measurements are introduced, including the equipment, technology and advantages and disadvantages of different data acquisition schemes. The channel parameter estimation methods are then presented, which include conventional spectral-based estimation, the specular-path-model based high-resolution method, and the newly derived power spectrum estimation methods. Measurement results are used to compare the performance of the different estimation methods. The third part gives a complete introduction to different modelling approaches. Among them, both scattering theoretical channel modelling and measurement-based channel modelling approaches are detailed. This part also approaches how to utilize these two modelling approaches to investigate wireless channels for conventional cellular systems and some new emerging communication systems. This three-part approach means the book caters for the

requirements of the audiences at different levels, including readers needing introductory knowledge, engineers who are looking for more advanced understanding, and expert researchers in wireless system design as a reference. Presents technical explanations, illustrated with examples of the theory in practice Discusses results applied to 4G communication systems and other emerging communication systems, such as relay, CoMP, and vehicle-to-vehicle rapid time-variant channels Can be used as comprehensive tutorial for students or a complete reference for engineers in industry Includes selected illustrations in color Program downloads available for readers Companion website with program downloads for readers and presentation slides and solution manual for instructors Essential reading for Graduate students and researchers interested in the characteristics of propagation channel, or who work in areas related to physical layer architectures, air interfaces, navigation, and wireless sensing

**Characterization and Modeling of the Ozark Aquifer in Southern Greene County, Missouri** Springer

Nano-scale materials have unique electronic, optical, and chemical properties which make them attractive for a new generation of devices. Part one of Modeling, Characterization, and Production of Nanomaterials: Electronics, Photonics and Energy Applications covers modeling techniques incorporating quantum mechanical effects to simulate nanomaterials and devices, such as multiscale modeling and density functional theory. Part two describes the characterization of nanomaterials using diffraction techniques and Raman spectroscopy. Part three looks at the structure and properties of nanomaterials, including their optical properties and atomic behaviour. Part four explores nanofabrication and nanodevices, including the growth of graphene, GaN-based nanorod heterostructures and colloidal quantum dots for applications in nanophotonics and metallic nanoparticles for catalysis applications. Comprehensive coverage of the close connection between modeling and experimental methods for studying a wide range of nanomaterials and nanostructures Focus on practical applications and industry needs, supported by a solid outlining of theoretical background Draws on the expertise of leading researchers in the field of nanomaterials from around the world

**Modeling, Characterization, and Production of Nanomaterials** Independently Published Earth science is becoming increasingly quantitative in the digital age. Quantification of geoscience and engineering problems underpins many of the applications of big data and artificial intelligence. This book presents quantitative geosciences in three parts. Part 1 presents data analytics using probability, statistical and machine-learning methods. Part 2 covers reservoir characterization using several geoscience disciplines: including geology, geophysics, petrophysics and geostatistics. Part 3 treats reservoir modeling, resource evaluation and uncertainty analysis using integrated geoscience, engineering and geostatistical methods. As the petroleum industry is heading towards operating oil fields digitally, a multidisciplinary skillset is a must for geoscientists who need to use data analytics to resolve inconsistencies in various sources of data, model reservoir properties, evaluate uncertainties, and quantify risk for decision making. This book intends to serve as a bridge for advancing the multidisciplinary integration for digital fields. The goal is to move beyond using quantitative methods individually to an integrated descriptive-quantitative analysis. In big data, everything tells us something, but nothing tells us everything. This book emphasizes the integrated,

multidisciplinary solutions for practical problems in resource evaluation and field development.

**Reservoir Characterization II** Cambridge University Press

Applications of Viscoelasticity: Bituminous Materials Characterization and Modeling starts with an introduction to the theory of viscoelasticity, emphasizing its importance to various applications in material characterization and modeling. It next looks at constitutive viscoelastic functions, outlines basic equations for different loading conditions, and introduces the Boltzmann superposition principle, relaxation modulus, and creep compliance. Mechanical models, including integer-order and fractional-order are studied next, featuring real experimentation data alongside the benefits and drawbacks of using each model in various real-world scenarios. The book then covers the correspondence principle, followed by time-temperature superposition, featuring a simple procedure to construct a real master curve and challenges that might be encountered. The concluding chapters cover the Hopkins and Hamming, Park and Kim, and General Power law methods for interconversion of constitutive viscoelastic functions, applications of viscoelasticity for experimental tests, and incremental form of viscoelastic relations for numerical modeling. The book also includes supplementary codes that users can duplicate and use in their own work. Takes an applied approach to material viscoelasticity, explaining complicated viscoelastic equations and principles Presents examples of those equations and principles being applied to common problems in realworld settings Covers constitutive viscoelastic functions, including relaxation modulus and creep compliance Outlines the construction of a master curve of viscoelastic material considering time-temperature superposition Couples the correspondence principle with common viscoelastic experiments, such as threepoint bending beam, axial and torsional bar, and dynamic shear rheometer Provides supplementary codes

Characterization and Modeling of the Digital High-Speed Autovon Channel Springer Science & Business Media

This book constitutes the refereed proceedings of the Third International Conference on Digital Human Modeling, ICDHM 2011, held in Orlando, FL, USA in July 2011. The 58 revised papers presented were carefully reviewed and selected from numerous submissions. The papers accepted for presentation thoroughly cover the thematic area of anthropometry applications, posture and motion modeling, digital human modeling and design, cognitive modeling, and driver modeling.

**Third International Conference, ICDHM 2011, Held as Part of HCI International 2011, Orlando, FL, USA, July 9-14, 2011, Proceedings** Characterization and Modeling of Digital Circuits

An interim analysis of error pattern data collected at 4800 b/s and 9600 b/s via digital data transmission on AUTOVON using the Codex 9600 modem has been performed. The data tends to show that errors occur in dense bursts, ranging in length to thousands of bits with significant numbers of bursts of a few hundred bits length. The bursts are generally separated by long error-free intervals. The differences between the 4800 b/s and 9600 b/s data appear to be minimal with fewer bursts at 9600 b/s. No conclusions should be drawn in terms of a 4800 vs 9600 b/s comparison since the data considered in this interim report was not balanced in terms of numbers of bits collected at the different data rates or the different selected switch connections. When equal amounts of data are available for the various switch configurations it should then be possible to

compare 4800 and 9600 b/s data. It has been demonstrated that an analytical channel model can be fit to the data, namely a MARKOV channel model. This model can be used for coding analysis by those who do not have the raw channel data and data analysis programs. (Author).

**Digital Human Modeling** Cambridge University Press

Rather than only being a complication to dark current correction, the presence of such pixels, and the model explaining their behavior, presents an opportunity to obtain information, such as the depth of these recombination-generation sites, which will aid in refining manufacturing processes for digital imagers.

Control of Mechatronic Systems World Scientific

Recent Advances in Materials Characterization and Modeling of Pavement Systems includes 16 technical papers presented during a one-day Pavement Mechanics Symposium at the 15th ASCE Engineering Mechanics Conference (EM2002) at Columbia University, New York, on June 4, 2002. The papers cover recent advances in the areas of subgrade soil and aggregate base/subbase materials characterization, asphalt concrete mixes and their constitutive modeling, pavement systems modeling, and use of artificial neural networks in pavement modeling. The analysis methods include both finite and discrete element modeling techniques, artificial neural networks, microstructural analysis, stiffness matrix approach for dynamic pavement analysis, and curve fitting and statistical parameter estimation techniques. Also included are different methods of laboratory and field testing: triaxial, asphalt tension, asphalt x-ray tomography imaging, asphalt binder, nondestructive pavement, accelerated pavement, and field bender element method. Engineers working within geotechnical and transportation facilities, who have a special interest in pavement mechanics, will find this special publication of particular interest.

Fiberglass Science and Technology Academic Press

A comprehensive, one-stop synthesis of landslide science, for researchers and graduate students in geomorphology, engineering geology and geophysics.

Polymer Nanocomposites Gulf Professional Publishing

This book highlights recent developments in fiberglass research and technology development, including high-performance fiberglass chemistry; in-depth glass network structure information derived from the-state-of-the-art spectroscopic measurements, molecular dynamics simulations, and their correlations with properties; fiber surface chemistry in relation to sizing chemistry - a critical part of composite performance; fiber process stability; fundamental understanding of the batch-to-melt conversion processes and melt flow simulations; and environmental concerns such as energy efficiency and emission of volatile species, which are key to environmentally-friendly product manufacturing. The book aims to guide fiberglass researchers and manufacturers towards better awareness and, perhaps, provides potential options for global ecosystem management. More than 500 current references are included, which will enable researchers from fiber glass industry and research institution access to the most recent progress in fiberglass science and technology. Advances scientific understanding of fiberglass-forming processes, rising in popularity as a building material throughout the world; Describes the current advances in the structure and formation of fiber glass, beginning with chemistry, a wide range of characterizations, and processes, through to applications; Contains information on environmental aspects of fiberglass production, addressing



energy consumption and emission.

**Fractured Reservoirs** Springer Science & Business Media

Characterization and Modeling of Digital Circuits Createspace Independent Publishing Platform

*Practical Reservoir Engineering and Characterization* John Wiley & Sons

The hydraulic properties of the Ozark aquifer and its upper confining unit were measured as part of the site characterization for the City Utilities Shallow Carbon Sequestration Demonstration Project. The goal was to delineate the cone of depression/capture zone (of any upward leaking CO<sub>2</sub>) produced by three onsite production wells above the CO<sub>2</sub> injection zone and to model future changes in this cone due to increased pumpage in nearby municipal wells. A three month cessation of pumping in two of the three production wells allowed a unique opportunity to measure the aquifer response to the decreased pumping. Aquifer tests yielded limiting transmissivity values of 0.017 to 0.053 ft<sup>2</sup>/sec. with a median value of 0.029 ft<sup>2</sup>/sec. and a storativity value centered around  $3 \times 10^{-4}$ . Digital model simulations of the steady potentiometric surface closely match measured levels with a calibrated transmissivity of 0.030 ft<sup>2</sup>/sec and a vertical hydraulic conductivity within the confining unit of  $3 \times 10^{-11}$  ft/sec. Thus, these calibrated values are very consistent with measured values and the calibrated model should provide reasonable estimates of the future capture zone under various pumping scenarios.

**Analog-to-Digital Conversion** Elsevier

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- The Idea Of Marginal Analysis As Economists Use It Implies : [click here](#)

The four short years since *Digital Communication over Fading Channels* became an instant classic have seen a virtual explosion of significant new work on the subject, both by the authors and by numerous researchers around the world. Foremost among these is a great deal of progress in the area of transmit diversity and space-time coding and the associated multiple input-multiple output (MIMO) channel. This new edition gathers these and other results, previously scattered throughout numerous publications, into a single convenient and informative volume. Like its predecessor, this Second Edition discusses in detail coherent and noncoherent communication systems as well as a large variety of fading channel models typical of communication links found in the real world. Coverage includes single- and multichannel reception and, in the case of the latter, a large variety of diversity types. The moment generating function (MGF)-based approach for performance analysis, introduced by the authors in the first edition and referred to in literally hundreds of publications, still represents the backbone of the book's presentation. Important features of this new edition include: \* An all-new, comprehensive chapter on transmit diversity, space-time coding, and the MIMO channel, focusing on performance evaluation \* Coverage of new and improved diversity schemes \* Performance analyses of previously known schemes in new and different fading scenarios \* A new chapter on the outage probability of cellular mobile radio systems \* A new chapter on the capacity of fading channels \* And much more *Digital Communication over Fading Channels, Second Edition* is an indispensable resource for graduate students, researchers investigating these systems, and practicing engineers responsible for evaluating their performance.