1. Record Nr. UNINA9910148794003321

Autore	Hirao Masahiko
Titolo	Electromagnetic Acoustic Transducers : Noncontacting Ultrasonic Measurements using EMATs / / by Masahiko Hirao, Hirotsugu Ogi
Pubbl/distr/stampa	Tokyo : , : Springer Japan : , : Imprint : Springer, , 2017
Edizione	[2nd ed. 2017.]
Descrizione fisica	1 online resource (XVI, 380 p. 287 illus., 44 illus. in color.)
Collana	Springer Series in Measurement Science and Technology, , 2198-7807
Disciplina	621.3815
Soggetti	Electronic circuits Materials science Acoustics Acoustical engineering Electronic Circuits and Devices Characterization and Evaluation of Materials Engineering Acoustics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Coupling mechanism -- Available EMATS -- Brief instruction to build EMATS -- Principles of EMAR for spectral response -- Free-Decay measurement for attenuation and internal friction -- In-SITU monitoring of dislocation mobility -- Elastic constants and internal friction of advances materials -- Resonance Ultrasound microscopy -- Nonlinear acoustics for Microstractural evolution -- On-line texturer monitoring of steel sheets -- Acoustoelastic stress measurements -- Measurement of induction-hardening depth -- Detection of flaw and corrosion -- Average grain size of steel -- Remaining-life assessment of fatigued metals -- Creep damage detection -- Field applications of EMATS.
Sommario/riassunto	This second edition provides comprehensive information on electromagnetic acoustic transducers (EMATs), from the theory and physical principles of EMATs to the construction of systems and their applications to scientific and industrial ultrasonic measurements on materials. The original version has been complemented with selected

	ideas on ultrasonic measurement that have emerged since the first edition was released. The book is divided into four parts: PART I offers a self-contained description of the basic elements of coupling mechanisms along with the practical designing of EMATs for various purposes. Several implementations to compensate for EMATs' low transfer efficiency are provided, along with useful tips on how to make an EMAT. PART II describes the principle of electromagnetic acoustic resonance (EMAR), which makes the most of EMATs' contactless nature and is the most successful amplification mechanism for precise measurements of velocity and attenuation. PART III applies EMAR to studying physical acoustics. New measurements have emerged with regard to four major subjects: in situ monitoring of dislocation behavior, determination of anisotropic elastic constants, pointwise elasticity mapping (RUM), and acoustic nonlinearity evolution. PART IV deals with a variety of individual issues encountered in industrial applications, for which the EMATs are believed to be the best solutions. This is proven by a number of field applications.

2.	Record Nr.	UNINA9910438039203321
	Autore	Maricau Elie
	Titolo	Analog IC reliability in nanometer CMOS / / Elie Maricau, Georges Gielen
	Pubbl/distr/stampa	New York, NY, : Springer Science, c2013
	ISBN	1-299-19739-6 1-4614-6163-4
	Edizione	[1st ed. 2013.]
	Descrizione fisica	1 online resource (xvi, 198 pages) : illustrations (some color)
	Collana	Analog circuits and signal processing
	Altri autori (Persone)	GielenGeorges
	Disciplina	621.3815
	Soggetti	Linear integrated circuits - Reliability Metal oxide semiconductors, Complementary
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Introduction -- CMOS Reliability Overview -- Transistor Aging Compact Modeling -- Background on IC Reliability Simulation -- Analog IC Reliability Simulation -- Integrated Circuit Reliability -- Conclusions.

Sommario/riassunto

This book focuses on modeling, simulation and analysis of analog circuit aging. First, all important nanometer CMOS physical effects resulting in circuit unreliability are reviewed. Then, transistor aging compact models for circuit simulation are discussed and several methods for efficient circuit reliability simulation are explained and compared. Ultimately, the impact of transistor aging on analog circuits is studied. Aging-resilient and aging-immune circuits are identified and the impact of technology scaling is discussed. The models and simulation techniques described in the book are intended as an aid for device engineers, circuit designers and the EDA community to understand and to mitigate the impact of aging effects on nanometer CMOS ICs. · Enables readers to understand long-term reliability of an integrated circuit; · Reviews CMOS unreliability effects, with focus on those that will emerge in future CMOS nodes; · Provides overview of models for key aging effects, as well as compact models that can be included in a circuit simulator, with model parameters for advanced CMOS technology; · Describes existing reliability simulators, along with techniques to analyze the impact of process variations and aging on an arbitrary analog circuit.