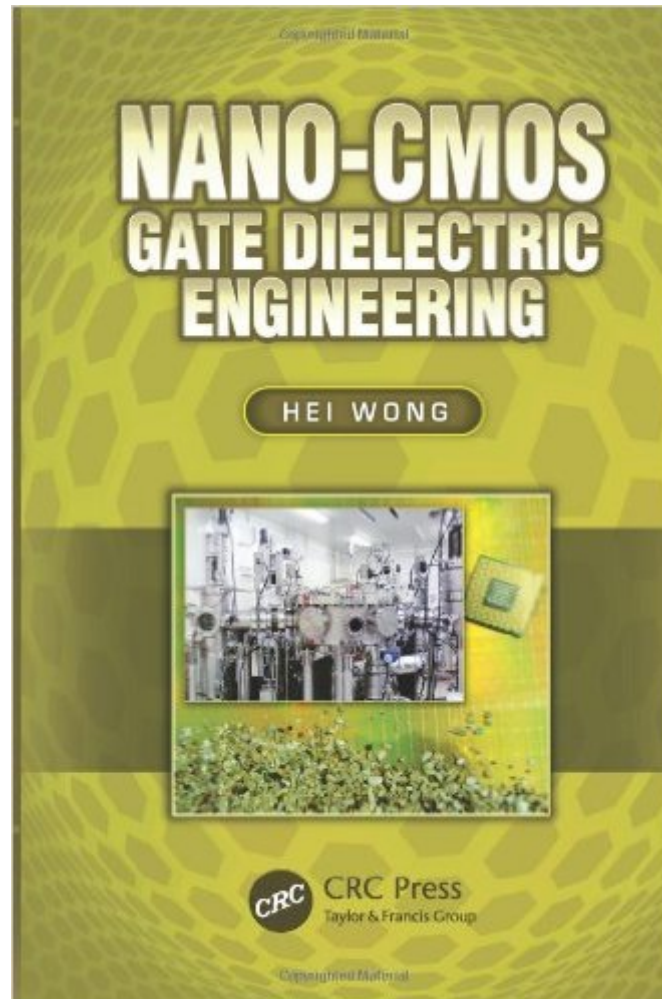


The book was found

# Nano-CMOS Gate Dielectric Engineering



## Synopsis

According to Moore's Law, not only does the number of transistors in an integrated circuit double every two years, but transistor size also decreases at a predictable rate. At the rate we are going, the downsizing of CMOS transistors will reach the deca-nanometer scale by 2020. Accordingly, the gate dielectric thickness will be shrunk to less than half-nanometer oxide equivalent thickness (EOT) to maintain proper operation of the transistors, leaving high-k materials as the only viable solution for such small-scale EOT. This comprehensive, up-to-date text covering the physics, materials, devices, and fabrication processes for high-k gate dielectric materials, Nano-CMOS Gate Dielectric Engineering systematically describes how the fundamental electronic structures and other material properties of the transition metals and rare earth metals affect the electrical properties of the dielectric films, the dielectric/silicon and the dielectric/metal gate interfaces, and the resulting device properties. Specific topics include the problems and solutions encountered with high-k material thermal stability, defect density, and poor initial interface with silicon substrate. The text also addresses the essence of thin film deposition, etching, and process integration of high-k materials in an actual CMOS process. Fascinating in both content and approach, Nano-CMOS Gate Dielectric Engineering explains all of the necessary physics in a highly readable manner and supplements this with numerous intuitive illustrations and tables. Covering almost every aspect of high-k gate dielectric engineering for nano-CMOS technology, this is a perfect reference book for graduate students needing a better understanding of developing technology as well as researchers and engineers needing to get ahead in microelectronic engineering and materials science.

## Book Information

Hardcover: 248 pages

Publisher: CRC Press; 1 edition (November 28, 2011)

Language: English

ISBN-10: 1439849595

ISBN-13: 978-1439849590

Product Dimensions: 0.8 x 6.2 x 9 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #3,813,296 in Books (See Top 100 in Books) #112 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Transistors #1022 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics >

Microelectronics #6739 in Books > Engineering & Transportation > Engineering > Materials & Material Science

[Download to continue reading...](#)

Nano-CMOS Gate Dielectric Engineering CMOS SRAM Circuit Design and Parametric Test in Nano-Scaled Technologies: Process-Aware SRAM Design and Test (Frontiers in Electronic Testing) Nano-CMOS Circuit and Physical Design Dielectric Spectroscopy of Polymeric Materials: Fundamentals and Applications (ACS Professional Reference Book) CMOS Analog Circuit Design (The Oxford Series in Electrical and Computer Engineering) Analog Design for CMOS VLSI Systems (The Springer International Series in Engineering and Computer Science) Ultra-Low Voltage Nano-Scale Memories (Integrated Circuits and Systems) Embedded Memories for Nano-Scale VLSIs (Integrated Circuits and Systems) Enzyme Nanoparticles: Preparation, Characterisation, Properties and Applications (Micro and Nano Technologies) Mondo Nano: Fun and Games in the World of Digital Matter (Experimental Futures) Dynamic Offset Compensated CMOS Amplifiers (Analog Circuits and Signal Processing) CMOS VLSI Design: A Circuits and Systems Perspective (3rd Edition) Design of Analog CMOS Integrated Circuits CMOS Circuit Design, Layout, and Simulation, 3rd Edition (IEEE Press Series on Microelectronic Systems) CMOS VLSI Design: A Circuits and Systems Perspective CMOS Cookbook, Second Edition CMOS Analog Circuit Design CMOS Digital Integrated Circuits Analysis & Design CMOS Digital Integrated Circuits: A First Course Chip Design for Submicron VLSI: CMOS Layout and Simulation

[Dmca](#)