Index

"*This book takes readers from the basic concepts of quantum transport theory to the quantitative applications of graphene nanoribbon field-effect transistors (GNRFETs), to SPICE-compatible modeling of realistic devices, to circuit design utilizing those SPICE models, and on to thermal applications of GNRFETs. It is not an edited volume, so there is continuity of information and uniformity in the treatment of the chapters.*"

Prof. Emeritus James E. Morris
Portland State University, USA

"*This book is timely and relevant for a better understanding of graphene and addresses its potential applications in next-generation nanoscale electronics and photonics. I expect it will soon be highlighted by many researchers and educators in its targeted research community.*"

Dr. Ebrahim Amiri
The University of New Orleans, USA

"*This book provides valuable background information on graphene-based transistors, modeling methodologies, and related applications at the circuit level. It coherently integrates device-level knowledge with graphene-based circuit design techniques and offers a comprehensive and up-to-date description of this emerging technology for young scientists and experts in the field.*"

Prof. Emre Salman
Stony Brook University (SUNY System), USA

Tremendous innovations in electronics and photonics over the past few decades have resulted in the downsizing of transistors in integrated circuits, which are now approaching atomic scales. This will soon result in the creation of a growing knowledge gap between the underlying technology and state-of-the-art electronic device modeling and simulations. This book bridges the gap by presenting cutting-edge research in the computational analysis and mathematical modeling of graphene nanostructures as well as the recent progress on graphene transistors for nanoscale circuits. It inspires and educates fellow circuit designers and students in the field of emerging low-power and high-performance circuit designs based on graphene. While most of the books focus on the synthesis, fabrication, and characterization of graphene, this book shines a light on graphene models and their circuit simulations and applications in photonics. It will serve as a textbook for graduate-level courses in nanoscale electronics and photonics design and appeal to anyone involved in electrical engineering, applied physics, materials science, or nanotechnology research.

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V727
ISBN 978-981-4800-36-5
9 789814 800365

JENNY STANFORD
PUBLISHING