

*Profile of Authors*

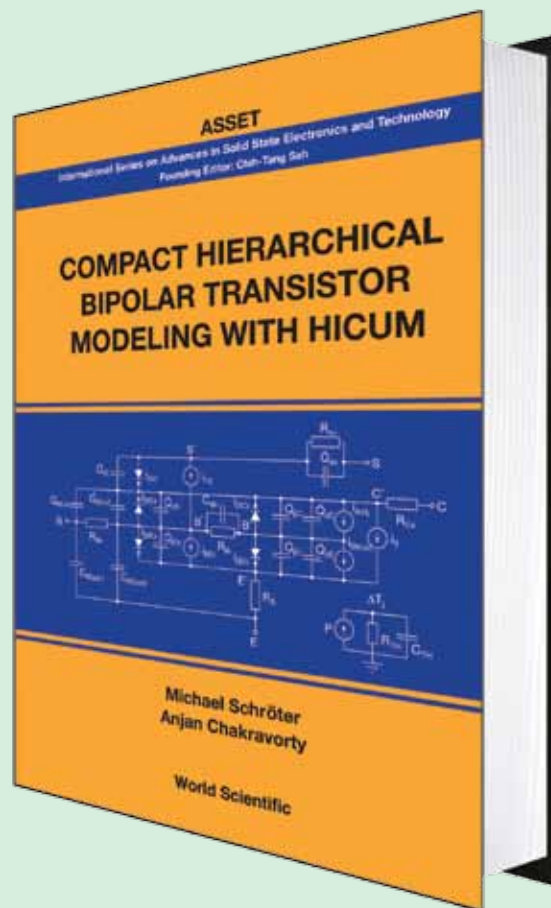


**Dr. Michael Schroter** received his electrical engineering Ph.D. in 1988 from the Ruhr-University Bochum, Germany. He was with Nortel, Ottawa, Canada, as Team Leader and Advisor until 1996 when he joined Rockwell (now Conexant), Newport Beach, California, where he managed the RF Device Modeling Group. Dr. Schroter has been a Full Professor at the University of Technology at Dresden (UTD), Germany since 1999, and a Research Professor at UC San Diego, USA. For several years, he was on the Technical Advisory Board of RFMAGIC (now Entropic Inc.), a communication system design

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**Dr. Anjan Chakravorty** received his B. Tech. degree from the University of Kalyani, India, in 1999, M. Tech. from the University of Calcutta, India, in 2001, and Ph.D. from Indian Institute of Technology Kharagpur in 2005. He was a Guest Scientist with the Modeling Group, Innovations for High Performance Microelectronics, IHP GmbH, Germany for nine months between 2003 and 2004. From 2005 to 2006, he was a Postdoctoral Fellow at Dresden University of Technology, Germany, where he worked on bipolar transistor model, HICUM. Since January 2007, he has been an Assistant Professor at the Department of Electrical Engineering, Indian Institute of Technology Madras. He has published in reputed international journals, mainly in the area of compact modeling. His current research interests include compact modeling of bipolar and MOS transistors, on-chip inductors and circuit design for RF applications.



International Series on Advances in Solid State Electronics and Technology

# COMPACT HIERARCHICAL BIPOLAR TRANSISTOR MODELING WITH HICUM

by **Michael Schroter** (*Dresden University of Technology, Germany*) &  
**Anjan Chakravorty** (*Indian Institute of Technology Madras, India*)

*Compact Hierarchical Bipolar Transistor Modeling with HICUM* will be of great practical benefit to professionals from the modeling, circuit design, and process development community who are interested in the application of bipolar transistors, which include SiGe:C HBTs fabricated with existing cutting-edge process technology. The book begins with an overview on the different device designs of modern bipolar transistors, along with their relevant operating conditions, and a review of mostly classical theories that are brought into context with modern technology. The subsequent chapters cover advanced theory that is required for understanding modern device designs which include such aspects as temperature dependence, geometry scaling, and noise. This book aims to provide a solid basis for the understanding of modern bipolar transistors and uses HICUM as a vehicle for model building.

**Readership:** R&D professionals and modeling/SPICE engineers in the semiconductor industry; graduate, research students, and faculties at universities.

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