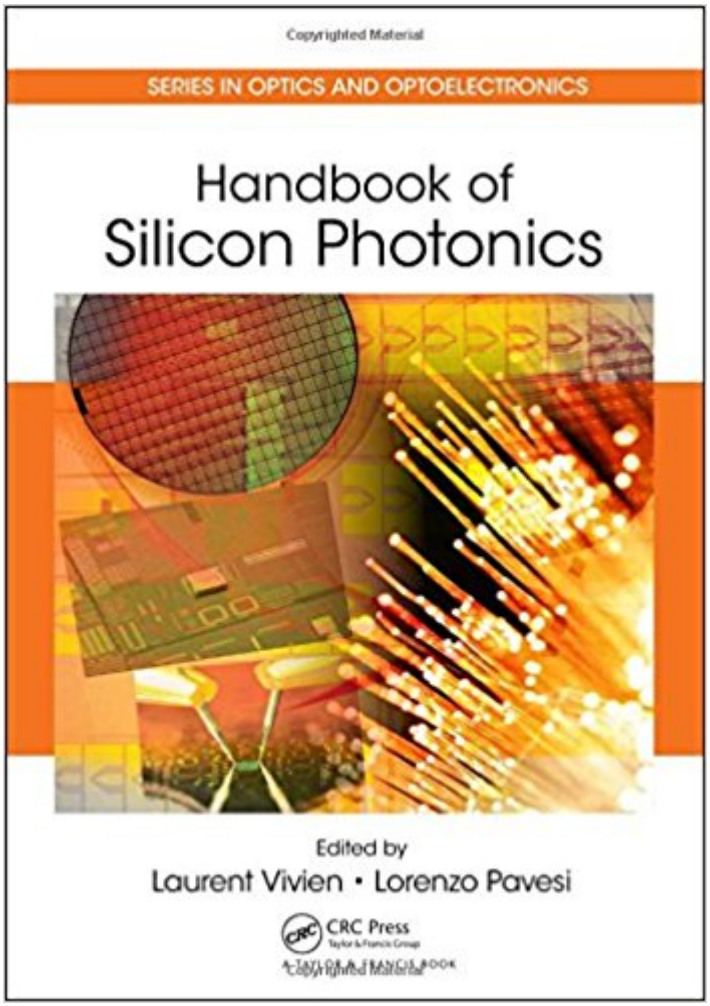
Handbook Of Silicon Photonics (Series In Optics And Optoelectronics)



Synopsis

The development of integrated silicon photonic circuits has recently been driven by the Internet and the push for high bandwidth as well as the need to reduce power dissipation induced by high data-rate signal transmission. To reach these goals, efficient passive and active silicon photonic devices, including waveguide, modulators, photodetectors, multiplexers, light sources, and various subsystems, have been developed that take advantage of state-of-the-art silicon technology. Suitable for both specialists and newcomers, Handbook of Silicon Photonics presents a coherent and comprehensive overview of this field from the fundamentals to integrated systems and applications. It covers a broad spectrum of materials and applications, emphasizing passive and active photonic devices, fabrication, integration, and the convergence with CMOS technology. The bookâ ™s self-contained chapters are written by international experts from academia and various photonics-related industries. The handbook starts with the basics of silicon as an optical material. It then describes the building blocks needed to drive integrated silicon photonic circuits and explains how these building blocks are incorporated in complex photonic/electronic circuits. The book also presents applications of silicon photonics in numerous fields, including biophotonics and photovoltaics. With many illustrations, including some in color, this handbook provides an up-to-date reference to the broad and rapidly changing area of silicon photonics. It shows how basic science and innovative technological applications are pushing the field forward.

Book Information

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Customer Reviews

"â | a very useful reference for researchers and engineers involved in photonic device integration."â •Silvano Donati, Optics & Photonics News, December 2013 "This book appears to address all major aspects of the science and technology of silicon photonics. Basic material properties are delineated, fabrication of devices is detailed; waveguides, modulators, light sources and detectors are discussed. Nonlinear optics, photonic crystals and photonic integration are all included. It is invidious perhaps to select one of the 15 chapters for special mention but the inclusion of a chapter on â ˆOff-Chip Couplingâ ™ underlines the attention to detail apparent throughout this bookâ |. This volume runs to over 800 pages and is packed with key information which is very clearly presented. Excellent figures, diagrams supplement the well-edited text. Substantial reference lists appear at the end of each chapter. The effort expended by the authors and editors in providing this panoramic perspective on a field of growing importance, and the enthusiasm for the field which emanates from the pages of this book, augurs well for the early realisation of Millerâ ™s 1969 vision." â " Contemporary Physics, Jan 2016, review by K Alan Shore

Both editors of this work are top researchers recognized worldwide in the field of Silicon Photonics. The reviewer giving this book 1 star has a vendetta against one of them, and should not be allowed to post such a slanderous comment. In any case, it should be obvious from the comments that this person has probably never even opened the book.Laurent Vivien received his Ph.D. degree in physics from the Polytechnique School, Palaiseau Cedex, France, in 2001. His Ph.D. Thesis was on nonlinear optical properties of carbon nanotubes for optical limiting.Between 2001 and 2003, he held a postdoctoral position with the Institute of Fundamental Electronics (IEF), Orsay, France, where studied single-mode and polarization-insensitive structures in silicon-on-insulators and the coupling from sub-micrometric waveguides to single mode fiber for optical telecommunication applications. Since 2003 he has joined the CNRS at the Institute of Fundamental Electronics where his activities are related to passive (waveguide, splitters, 90Ã Â turns, optical couplers) and active (Si-based optical modulators and Ge on Si photodetectors) micro and nanophotonic devices on silicon for optical interconnects and optical fiber communications. Since 2006, he has been in charge of the group of Micro and Nanophotonic devices on silicon.Lorenzo Pavesi is Professor of Experimental Physics at the University of Trento (Italy). Born the 21st of November 1961, he received his PhD in Physics in 1990 at the Ecole Polytechnique Federale of Lausanne (Switzerland). He leads the Nanoscience Laboratory (25 people). His research activity concerned the optical properties of semiconductors. During the last years, he concentrated on Silicon based photonics where he looks for the convergence between photonics and electronics by using silicon

nanostructures. He is interested in active photonics devices which can be integrated in silicon by using classical waveguides or novel waveguides such as those based on dynamical photonic crystals. His interests encompass also optical sensors or biosensors and solar cells. He is an author or co-author of more than 280 papers, author of several reviews, editor of more than 10 books, author of 2 books and holds six patents. He holds an H-number of 41 according to the web of science.

The content of this book doesn't really contain any of the latest research on silicon photonics, which has accelerated in the past few years. The author has written several books in the past and it seems that this is just another money making opportunity. Pavesi was once responsible for a Nature paper on optical gain in silicon, which nobody could ever validate, and nothing ever came of it. Time for something new and exciting that moves with the times. This book definitely does not, and any one who buys it would be really missing out on the latest advances in silicon photonics which do have value.