



Handbook of Silicon Photonics (Series in Optics and Optoelectronics)

From Brand: Taylor Francis

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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 book'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.



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Editorial Review

Review

"... a very useful reference for researchers and engineers involved in photonic device integration."
?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 'Off-Chip Coupling' underlines the attention to detail apparent throughout this book.... 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 Miller's 1969 vision." – *Contemporary Physics*, Jan 2016, review by K Alan Shore

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