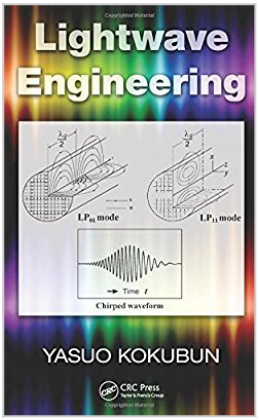

Lightwave Engineering (Optical Science and Engineering)

By Yasuo Kokubun

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Suitable as either a student text or professional reference, **Lightwave Engineering** addresses the behavior of electromagnetic waves and the propagation of light, which forms the basis of the wide-ranging field of optoelectronics.

Divided into two parts, the book first gives a comprehensive introduction to lightwave engineering using plane wave and then offers an in-depth analysis of lightwave propagation in terms of electromagnetic theory. Using the language of mathematics to explain natural phenomena, the book includes numerous illustrative figures that help readers develop an intuitive understanding of light propagation. It also provides helpful equations and outlines their exact derivation and physical meaning, enabling users to acquire an analytical understanding as well. After explaining a concept, the author includes several problems that are tailored to illustrate the explanation and help explain the next concept.

The book addresses key topics including fundamentals of interferometers and resonators, guided wave, optical fibers, and lightwave devices and circuits. It also features useful appendices that contain formulas for Fourier transform, derivation of Green's theorem, vector algebra, Gaussian function, cylindrical function, and more. Ranging from basic to more difficult, the book’s content is designed for easily adjustable application, making it equally useful for university lectures or a review of basic theory for professional engineers.

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Editorial Review

About the Author

Yasuo Kokubun received his B.E. degree from Yokohama National University, Yokohama, Japan, in 1975 and M.E. and Dr. Eng. degrees from Tokyo Institute of Technology, Tokyo, Japan, in 1977 and 1980, respectively. After he worked for the Research Laboratory of Precision Machinery and Electronics, Tokyo Institute of Technology, as a research associate from 1980 to 1983, he joined the Yokohama National University as an associate professor in 1983, and is now a professor in the Department of Electrical and Computer Engineering. From 2006 to 2009 he served as the Dean of Faculty of Engineering and is now the Vice-President of Yokohama National University. His current research is in integrated photonics including waveguide-type functional devices and three-dimensional integrated photonics, and also in optical fibers including multi-core fibers. From 1984 to 1985 he was with AT&T Bell Laboratories as a visiting researcher studying a novel waveguide on a semiconductor substrate (ARROW) for integrated optics. From 1996 to 1999, he led the Three-dimensional microphotonics project at the Kanagawa Academy of Science and Technology. Professor Kokubun is a Fellow of the Institute of Electrical and Electronics Engineers, a Fellow of the Japan Society of Applied Physics, a Fellow of the Institute of Electronics, Information and Communication Engineers, and a member of the Optical Society of America.

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