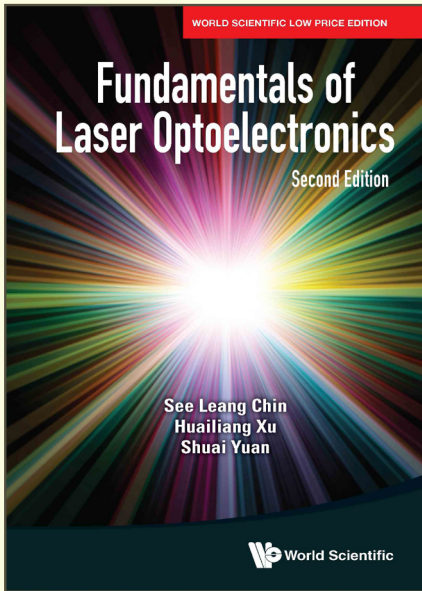


Fundamentals of Laser Optoelectronics, 2nd Edition



By **See Leang Chin**

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ABOUT THE BOOK

This textbook is based on a course given by the first-named author to third and fourth year undergraduate students from physics, engineering physics and electrical engineering. The purpose is to introduce and explain some of the fundamental principles underlying laser beam control in optoelectronics, especially those in relation to optical anisotropy which is at the heart of many optical devices. The book attempts to give the reader the background knowledge needed to work in a laser, optoelectronic or photonic environment, and to manage and handle laser beam equipment with ease.

In this edition, recent research results on modern technologies and instruments relevant to laser optoelectronics have been added to each chapter. New material include: chirped pulse amplification for petawatt lasers; optical anisotropy; physical explanations for group velocity dispersion, group delay dispersion, and third order dispersion; an introduction of different types of laser systems; and both optical isotropy and anisotropy in different types of harmonic generation.

Theories based upon mode-locking and chirped pulse amplifications have become increasingly more important. It is thus necessary that students learn all these in a course devoted to laser optoelectronics. As such, Chapter 12 is now devoted to mode-locking and carrier-envelope phase locking. A new chapter, Chapter 13, which focuses on chirped pulse amplification has also been added.

READERSHIP

Undergraduate physics, engineering physics and electrical engineering courses devoted to laser optoelectronics. Graduated students and scientists working in the fields of physics, engineering physics and electrical engineering researching on laser optoelectronics may also benefit from the book.

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ABOUT THE AUTHORS

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Huailiang Xu received his PhD degree in Physics from Lund University, Sweden in 2004. He then worked as a postdoctoral researcher at the Department of Physics, Laval University, Canada. In January 2008, he became an Assistant Professor at the Department of Chemistry, University of Tokyo, Japan. Since September 2009, He has been a full professor at Jilin University, China. His research interests include Laser spectroscopy and Strong Laser-matter interaction. He received the National Distinguished Young Scholar award from National Nature Science Foundation of China (NSFC) in 2016, and has published more than 180 papers in journals and 5 book chapters.

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