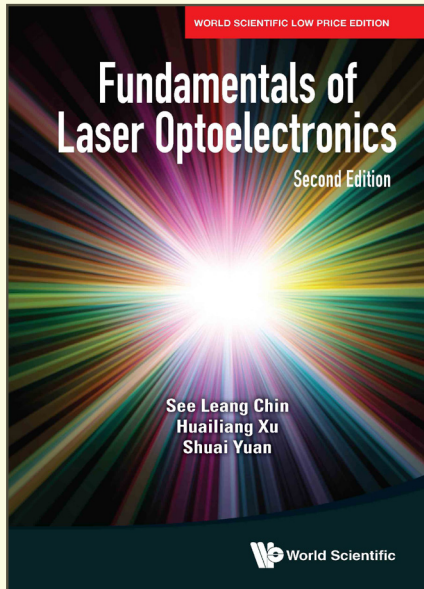


# Fundamentals of Laser Optoelectronics, 2nd Edition



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.

## CONTENTS

- Foreword
- About the Authors
- Introduction
- Maxwell's Equations, Wave Equation and Waves: A Review

- Snell's Law, Fresnel Equations, Brewster Angle and Critical Angle
- Resonator: A Geometrical View
- The Laser
- Paraxial Gaussian Wave Propagation and Modes
- Optical Anisotropy in a Lossless Medium
- Polarization, Its Manipulation and Jones Vectors
- Electric Field-Induced Anisotropy: Electro-Optics and Q-Switching
- Mechanical Force Induced Anisotropy and Acousto-Optics
- Magnetic Field-Induced Anisotropy
- Importance of Anisotropy in Second-Harmonic Generation
- Mode Locking and Carrier-Envelope Phase Locking
- Chirped Pulse Amplification
- Index

## ABOUT THE AUTHORS

**See Leang Chin** is Professor Emeritus of physics in Université Laval, Quebec City, Canada. Before his retirement, he occupied the position of senior Canada Research Chair (CRC) in ultrafast intense laser sciences since the inception of the CRC program in 2000 by the federal government. He is a pioneer in intense laser multiphoton/tunnel ionization of atoms and molecules as well as ultrafast intense laser filamentation. In 2001, he received the Humboldt Research Award in Germany, the highest distinction of the Humboldt Research Foundation for a foreign scientist. In 2011, he received the highest award of the Canadian Association of Physicists, namely, the Medal of Lifetime Achievement in Physics. He is fellow of the Optical Society of America (OSA now Optica). He has published more than 400 research papers.

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