

## A Tribute to Emil Wolf: Science and Engineering Legacy of Physical Optics

Tomasz P. Jansson, ed.  
SPIE Press, Bellingham, Wa., 2005; \$ 92.00 (hardcover)

This handsomely bound book presents the proceedings of SPIE's August 2003 tribute conference for Emil Wolf, who is one of the truly grand old men of optics. The volume contains a total of 23 articles from authors in nine countries; it contains reminiscences by former collaborators and colleagues (as well as Wolf's own account of his collaboration with Max Born), and overviews of the latest developments in the areas of optics to which Wolf has contributed.

Wolf has been an active researcher in optics since 1947. He co-authored with Max Born the book *Principles of Optics*, which was originally published in 1959 and has become the "bible" of optics. Indeed, it is one of the most widely cited books in all of physical science. Wolf has published more than 360 papers, many of which address the development of the theory of optical coherence. Wolf collaborated with Leonard Mandel to publish the definitive text *Optical Coherence and Quantum Optics* in 1995. Since 1959, he has been a faculty member at the University of Rochester, where he continues to hold the Wilson Chair of Optical Physics. He is also the Provost's Distinguished Research Professor of Optics at the University of Central Florida.

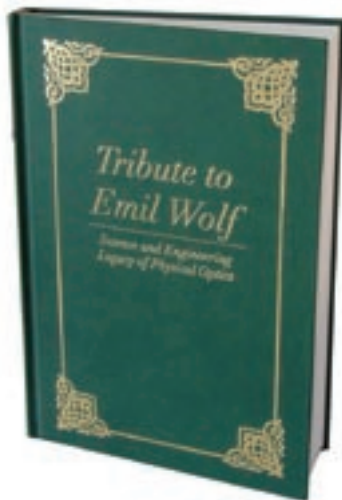
This volume holds the greatest appeal for Emil's friends and associates, a great many of whom are members of the Optical Society of America. For them, the highlight may be Brian Thompson's recollections of the glory days of classical coherence theory in Manchester in the late 1950s.

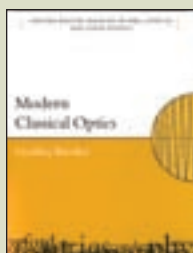
By presenting a snapshot of current topics in theoretical physical optics, the book caters to a broader readership as well. Multiple authors address a wide range of areas, including singular optics, coherence-induced spectral shifts, inverse scattering, near-field optics and polarization. Written in an accessible style, this is the sort of book one could sit down with for a few hours. For example, Taco Visser of the Free University of Amsterdam draws the reader in with a historical discourse on a subject that we think we know all about—Young's interference experiment—and uses it to introduce the currently hot field of phase singularities and their role in diffraction theory.

The tribute also includes the opinions of internationally renowned scientists—including V.I. Tatarskii, G.S. Agarwal and A.A. Maradudin—on coherence-induced spectral changes, also known as the "Wolf shift." Nearly all the authors include reminiscences of Wolf, and some of the articles address his influence as the main theme, such as Jan Perina's article on the contribution of Wolf's work to the development of optics in the Czech Republic.

In short, this book is a festschrift of uncommon quality. Its appeal goes beyond the honoree's circle of friends and collaborators. Tomasz Jansson, the editor, and the authors can be proud of having produced this fitting tribute to Emil's career.

[ Review by Daniel F.V. James, department of physics, University of Toronto. ]





## Modern Classical Optics

Geoffrey Brooker  
Oxford University Press, 2003;  
\$49.50 (softcover), \$95.00 (hardcover).

Written for advanced undergraduates or beginning graduate students, this book presents classical optics from a modern perspective. The author focuses mainly on physical optics, with only a minimum amount of discussion devoted to geometrical optics.

Topics covered include diffraction, coherence, diffraction gratings, the Fabry-Perot interferometer, thin films, holography, Gaussian beams, laser cavities, confocal microscopes and compact disks. The book includes many excellent homework problems, which are identified according to their degree of difficulty on a three-point scale. The authors also present a reasonable bibliography. *Modern Classical Optics* is clearly written, and students should enjoy learning from it.

[ Review by James C. Wyant, College of Optical Sciences, University of Arizona, Tucson. ]



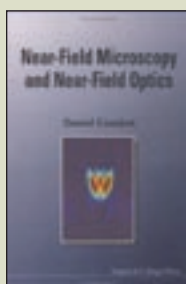
## Laser Safety

Rog Henderson and Karl Schulmeister  
Institute of Physics, 2003; \$99.00 (hardcover).

*Laser Safety* is a comprehensive overview that covers all kinds of laser devices as well as LEDs and related equipment. It focuses mainly on how to avoid eye and skin hazards such as thermal, photochemical and photomechanical damage. Lasers are classified in the book according to the amount of damage they can incur. The authors also discuss various safety standards and their applications.

This book is intended as a handbook. It includes some valuable references in the appendices, with sections on special parameters, common misunderstandings and some MPE and AEL values. It is a useful volume for the laser manufacturer, user and laser management officer.

[ Review by Yang Enze, Tianjin University School of Electronics and Information Engineering, Tianjin, China. ]



## Near-Field Microscopy and Near-Field Optics

Daniel Courjon  
Imperial College Press, 2003; \$72.00 (hardcover).

This book discusses the history, theory, instrumentation and applications of non-radiating sources and non-propagating fields, and how they are incorporated into various near-field optical microscopes. It is unique in its depth and rigor, which are combined with clear explanations of the theory, modeling with approximations of the field-matter interactions, an analysis of microscopic resolution, noise in optical systems and artifacts. The figures, tables and graphs greatly enhance the reader's understanding. The book also contains a survey of fundamental relations in optics, a bibliography, a nomenclature, an index, a list of acronyms, a glossary and an author index. Advanced undergraduates, engineers and researchers would be well served by this highly recommended book.

[ Review by Barry R. Masters, OSA Fellow, SPIE Fellow and consultant in Arlington, Va. ]



CLARIFICATION: A photo of bioluminescence in a breaking beach wave during a red tide of the dinoflagellate *Lingulodinium polyedrum* in Santa Barbara, Calif., that ran in the October issue of OPN (p. 44), should have been credited to Steve Malone, Santa Barbara News-Press.

## WDM Technologies: Passive Optical Components

Achyut K. Dutta, Niloy K. Dutta and Masahiko Fujiwara  
Academic Press, 2003; \$99.95 (hardcover).

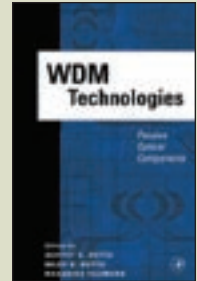
Almost all of the critical passive components that could be used for WDM technologies are covered in this volume. It includes three major component categories based on their applications: WDM multiplexer/demultiplexer technologies; optical switching technologies; optical amplifier technologies; and critical technologies—semiconductor monolithic circuits.

The book covers a number of passive components, including thin film dielectric filters, fiber Bragg gratings, AWGs, diffraction gratings, circulators, micro-electro-mechanical systems, PLC type thermo-optic switches, and lithium niobate and electro-optic guide-wave optical switches. The authors describe the characteristics and applications of these devices, and explore design considerations.

Although the main focus is on passive components, the book also includes a chapter on optical amplifiers, including semiconductor optical amplifiers (SOAs), erbium-doped fiber amplifiers (EDFA) and fiber Raman amplifiers. The authors review several amplification approaches such as the cascade of EDFA with either Raman amplifiers or SOAs that enable terabit lightwave systems. The book would be more complete if semiconductor optical amplifier-based switches were also covered in the section on optical switching.

This book is based on the hands-on experiences of the authors; thus, it functions well as a handbook for readers who are currently working in the WDM fields. It is not intended as an introductory book that includes details of the theories of these devices.

[ Review by Steve M. Hong, director, Technical Marketing and Product Development, TrueLight Corp., Hsinchu, Taiwan. ]



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