Due to its central role in modern communications technologies, photonics—or optical electronics—has evolved dynamically over the last ten years. *Photonics: Optical Electronics in Modern Communications* by Amnon Yariv and Poochi Yeh is extensively revised and updated to keep pace with this unprecedented development. Now more tailored to optical communication, the sixth edition integrates material on generating and manipulating optical radiation and designing photonic components for the transmission of information. It also presents a broader theoretical underpinning and more explanations of mathematical derivations than the previous edition.

The text describes the basic physics and principles of operation of major photonic components in optical communications and electronics. These components include optical resonators, various lasers, waveguides, optical fibers, gratings, and photonic crystals. *Photonics* also covers the transmission, modulation, amplification, and detection of optical beams in optical networks, as well as nonlinear optical effects in fibers. It assumes a background in electromagnetic theory, Maxwell's equations, and electromagnetic wave propagation.

Including numerous examples throughout, *Photonics* is ideal for advanced undergraduate and graduate courses in photonics, optoelectronics, or optical communications. It is also a useful reference for practicing engineers and scientists.

**NEW MATERIAL IN THE SIXTH EDITION**

- **Stokes Parameters and Poincaré Sphere**: polarization states in birefringent optical networks, principal states of polarization
- **Fermat's Principle**: rays, beam propagation, and the Fresnel diffraction integral
- **Matrix Formulation**: wave propagation in multicavity etalons, multilayer structures, mode coupling, and supermodes in mode-locked lasers
- **Dispersion**: chromatic dispersion and polarization mode dispersion (PMD) in fibers and their compensation
- **Coupled Resonators Optical Waveguides (CROWs)**: matrix formulation, critical coupling, and dispersion relation
- **Nonlinear Optical Effects in Fibers**: self-phase modulation, cross-phase modulation, stimulated Brillouin scattering (SBS), stimulated Raman scattering (SRS), optical four-wave mixing, and spectral reversal (phase conjugation)
- **Electroabsorption**: waveguide electro-optic Mach–Zehnder modulators
- **Photonic Crystals**: Bloch wave formulation, photonic bands, photonic bandgaps, periodic layered media, fiber Bragg gratings, and Bragg reflection waveguides
- **Optical Amplifiers**: SOA, EDFA, and Raman

**PHOTONICS: OPTICAL ELECTRONICS IN MODERN COMMUNICATIONS**, Sixth Edition, is part of *The Oxford Series in Electrical and Computer Engineering*.

**ABOUT THE AUTHORS**

Amnon Yariv is the Martin and Eileen Summerfield Professor of Applied Physics and Professor of Electrical Engineering at the California Institute of Technology.

Poochi Yeh is Professor of Electrical Engineering at the University of California, Santa Barbara.

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