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Nota di contenuto	Emission of Light and Laser Fundamentals -- Gas and Liquid Lasers -- Solid-State Lasers -- Semiconductor Lasers -- Light Propagation in Free Space and Waveguides -- Optical Elements for Lasers -- Laser Operation Modes -- Instruments for Laser Beam Characterization -- Material Processing -- Medical Applications and Biophotonics -- Further Applications and Development Potential -- Laser Safety.
Sommario/riassunto	This book provides a comprehensive overview of laser sources and their applications in various fields of science, industry, and technology.

After an introduction to the basics of laser physics, different laser types and materials for lasers are summarized in the context of a historical survey, outlining the evolution of the laser over the past five decades. This includes, amongst other aspects, gas lasers, excimer lasers, the wide range of solid-state and semiconductor lasers, and femtosecond and other pulsed lasers where particular attention is paid to high-power sources. Subsequent chapters address related topics such as laser modulation and nonlinear frequency conversion. In closing, the enormous importance of the laser is demonstrated by highlighting its current applications in everyday life and its potential for future developments. Typical applications in advanced material processing, medicine and biophotonics as well as plasma and X-ray generation for nanoscale lithography are discussed. The book provides broad and topical coverage of laser photonics and opto-electronics, focusing on significant findings and recent advances rather than in-depth theoretical studies. Thus, it is intended not only for university students and engineers, but also for scientists and professionals applying lasers in biomedicine, material processing and everyday consumer products. Further, it represents essential reading for engineers using or developing high-power lasers for scientific or industrial applications.