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Altri autori (Persone)	van WijkEduard CifraMichal VladimirovYury A
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Nota di contenuto	Introduction -- Part 1. History of UPE research -- Mitogenetic rays -- Oxidation, free-radicals and ultraweak luminescence -- Biophotons and the International Institute of Biophysics (IIB) -- Part 2. Physics of light and light research -- Physics of photon emission -- Chemiluminescence as a tool for free radical research -- Highly sensitive imaging and spectral analysis of UPE from biological systems and their application -- Part 3. Molecular mechanisms of UPE -- Free radicals in biology -- Ultraweak luminescence from aqueous systems -- Chemiluminescence in oxidation of hydrocarbons: mechanistic fundamentals -- Chemiluminescence in oxidation of fatty acids and lipids -- Chemiluminescence in protein oxidation -- Emitters of endogenous biological chemiluminescence: quantum chemical modeling insights -- Enzymatic sources of free radicals -- Part 4. UPE

research in life science -- Luminescence of animal tissues and vegetable oils -- Ultraweak photon emission from human body in relation to anatomy and histology -- Chronobiological aspects of spontaneous ultra-weak photon emission in humans: Ultradian, circadian and infradian rhythms -- Autoluminescence in seedlings: applications -- Application potentiality of Delayed Luminescence in Medicine, Biology and Food Quality researches -- Part 5. Mitogenetic effect and related phenomena: unresolved problems of UPE -- Mitogenetic effect: preface -- Mitogenetic effect in biological systems -- Physical properties of mitogenetic radiation -- Secondary, degradation and necrobiotic radiation -- Mitogenetic research in medicine: radiation of blood and cancer diagnostics -- Part 6. Non-chemical distant interaction hypothesis - pro et contra -- Non-chemical distant interaction: preface -- The possible functions of electromagnetic cell communication -- Understanding of Fritz-Albert Popp's biophoton theory from the viewpoint of a biologist -- Limits to the information transfer through UPE -- Quantum nonlocality and biological coherence -- Part 7. Perspectives -- Integrating ultraweak photon emission in mitochondrial research -- Selected biophysical methods for enhancing biological autoluminescence -- Upconverting nanoparticles as sources of singlet oxygen -- Upconverting nanoparticles as sources of singlet oxygen -- Delayed Luminescence as a tool to study the structures of systems of biological interest and their collective long-living excited states -- Index.

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#### Sommario/riassunto

This book addresses the phenomenon of biological autoluminescence (also known as ultraweak photon emission, UPE, biochemiluminescence, or biophotons) and deals with a very broad spectrum of subjects, ranging from basic observational studies to molecular mechanisms, free-radical processes, physics of electron excitation and photon emission, as well as detection techniques. The chapter topics include UPE in plants, animals, and the human body; microorganisms and subcellular structures; and model systems, illustrating its high prevalence. Several sections of the book provide some backstory, with emphasis on methodology, unresolved questions, and existing controversies. The authors raise and discuss complex, potentially divisive aspects: Are there any reasons to assume the existence of non-chemical interaction in biological systems? Can research results in the field of mitogenetic radiation, delayed luminescence, and oxychemiluminescence of model systems, be correctly interpreted? What does the future hold for this area of research? Altogether, this publication gives the reader a thorough overview of biological autoluminescence (UPE, biophotonics) research, making it ideal for students and researchers who are new to the area as well as those who are specializing in it.

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