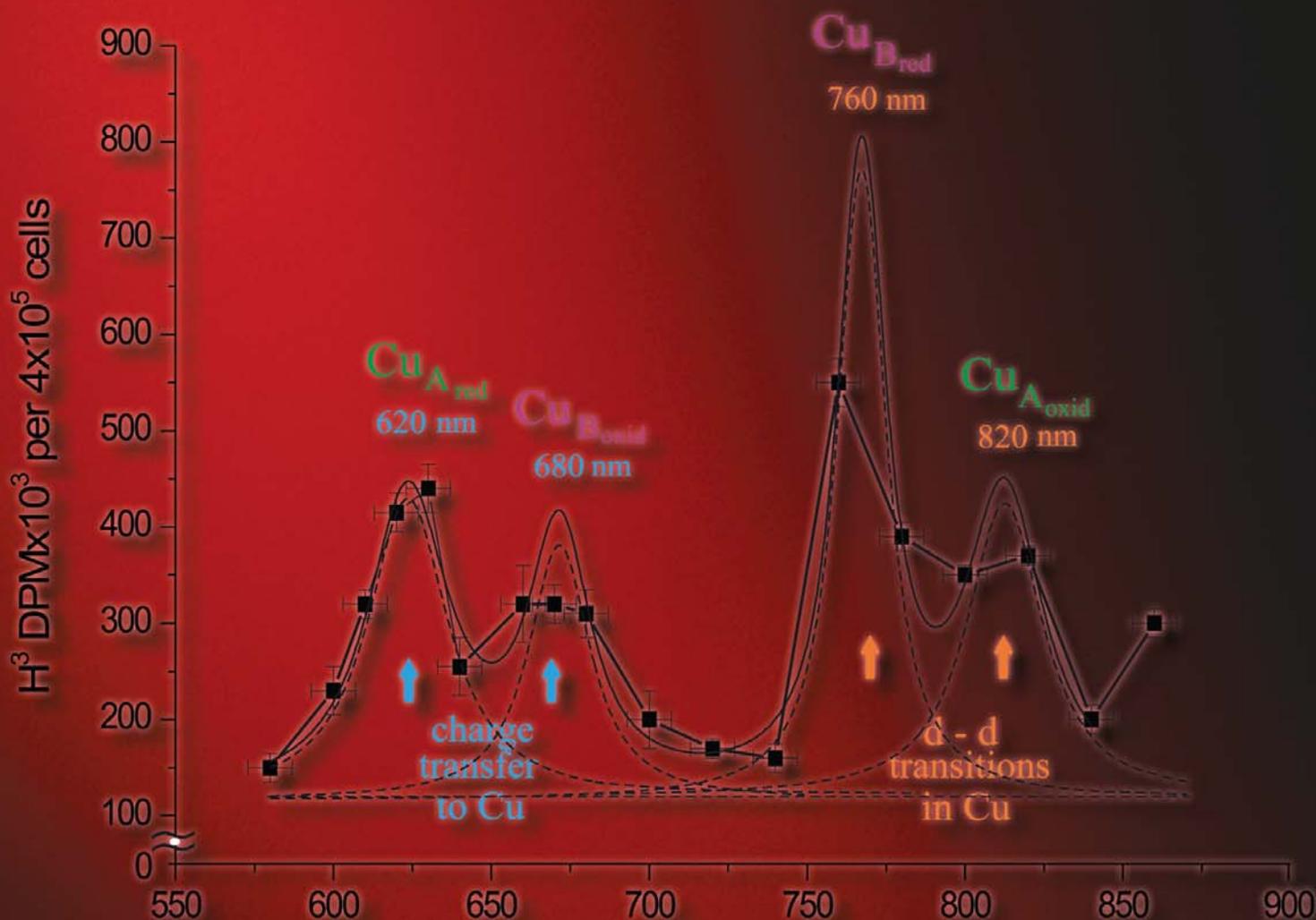


Ten Lectures on Basic Science of Laser Phototherapy

Tiina Karu



Ten Lectures on Basic Science of Laser Phototherapy

This book aims to summarize and update the current status of cellular and biomedical studies on the mechanisms behind laser phototherapy. Laser phototherapy is an effective tool for the treatment of musculo-skeletal injuries, pain, arthritis and certain other conditions, which utilizes monochromatic or quasimonochromatic light in the red-to-near infrared region both from lasers and light-emitting diodes. Some promising new areas of laser phototherapy are also briefly highlighted in this book.

The main goal of this book is to review the current understanding of the cellular mechanisms (photoacceptors, short-term and long-term biomedical reactions, cell metabolism rearrangements) of laser phototherapy. A photobiological mechanism based on activation/upgrading of the terminal enzyme of the mitochondrial respiratory chain, cytochrome c oxidase, is considered as a universal mechanism controlling many aspects of the metabolism in different types of irradiated cells.

This comprehensive review of the author's research and the world literature is an essential tool for researchers, working medical professionals and graduate students requiring a quick source of reference in the developing field of laser light-tissue interactions.

Table of content - short

- Lecture 1.** Introductory remarks. Where are we and whither do we go?
- Lecture 2.** Brief history. Light properties and parameters important in contemporary phototherapy
- Lecture 3.** Dependences of biological responses of cells on the parameters of radiation: dose, intensity, polarization
- Lecture 4.** Dependence of the biological responses of cells on the parameters of radiation: wavelength and monochromaticity. Modification of light responses with chemicals.
- Lecture 5.** The identification of photoacceptor molecules
- Lecture 6.** Cellular signaling pathways
- Lecture 7.** How does cellular signaling work?
- Lecture 8.** Irradiation effects are detectable in the cells of subsequent generations
- Lecture 9.** Other examples of cellular activation via the mitochondria
- Lecture 10.** Activation of other redox chains. The differences between cellular responses to CW and pulse-modulated light

**This book can be ordered via the secure server on
www.prima-books.com. Price is € 105, freight € 16.**

About the Author

Prof. Tiina Karu is the Head of the Laboratory of Laser Biology and Medicine at the Institute of Laser and Information Technologies (formerly - Laser Technology Research Center) of the Russian Academy of Sciences. She is the author of more than 300 publications as well as two books ("Photobiology of Low Power Laser Therapy" Harwood Acad. Publ., 1989 and "The Science of Low-Power Laser Therapy" Gordon and Breach, 1998). Her extensive experience and research in the field have led her to become internationally acknowledged as the leading researcher into the cellular effects of laser irradiation.