

4<sup>th</sup> International Conference on

# PAIN MEDICINE

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### **Advances in photobiomodulation therapy – a new paradigm in pain management**

The advent of new generation medical-grade LED biophotonic devices for the clinical treatment of pain using photobiomodulation therapy (PBT) is discussed. Compared to present-day LED and laser phototherapies, the device's advanced technology and intuitive user interface enables a physician or pain therapist unparalleled control of treatment conditions to maximize PBT efficacy including average power control of LED brightness and temperature, sequencing various LED wavelengths for controlling light penetration depth and mix, treatment duration to control total energy dose, and pulse frequency control for improved tissue specificity. The importance of treatment frequency in LightMD case studies and the possible photochemical and photobiological mechanisms for observed pulse frequency dependence on pain and nerve inflammation is considered. In addition to advances in photonic control, a new manufacturing technology for 3D bendable "LightPads" is described, each comprising an array of over 200 high-brightness LEDs housed in non-porous, aseptic, hypoallergenic polymeric pads, designed to bend and fit snugly to a person's body contours to reduce optical refraction from epithelial tissue, maximize energy coupling, and enhance PBT efficacy. Compared to the small spot size of laser probes and LED wands, a set of six LightPads offers hands-free treatment of injured or painful tissue 300 times the area of conventional probes. The professional medical PBT device is FDA audited and approved in United States, Taiwan, Dubai, and the United Arab Emirates; CE and ISO-13485 medical safety rated, uses FDA-certified good manufacturing practices (GMP), and is IEC rated for photobiological safety (no glasses required). A sneak peek of a lower cost "prosumer" (professional-consumer) device will also be provided

### **Biography**

Richard is a serial entrepreneur, technologist, author, speaker, and prolific inventor. Currently he is CEO, President, and Chief Technology Officer (CTO) of Applied BioPhotonics Ltd., a Hong Kong based medical-device design specifier and GMP-certified manufacturing company, and is CEO of LightMD Inc., a Silicon Valley based seller of photobiomodulation therapy (PBT) devices. In 1999, he founded Advanced Analogic Technologies, and as CEO-CTO developed the first LED backlight dimming and LED camera flash for smartphones, followed by dynamic LED backlighting for major brand HDTVs.

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