Electromagnetic Fields in Biological Systems (Biological Effects of Electromagnetics)

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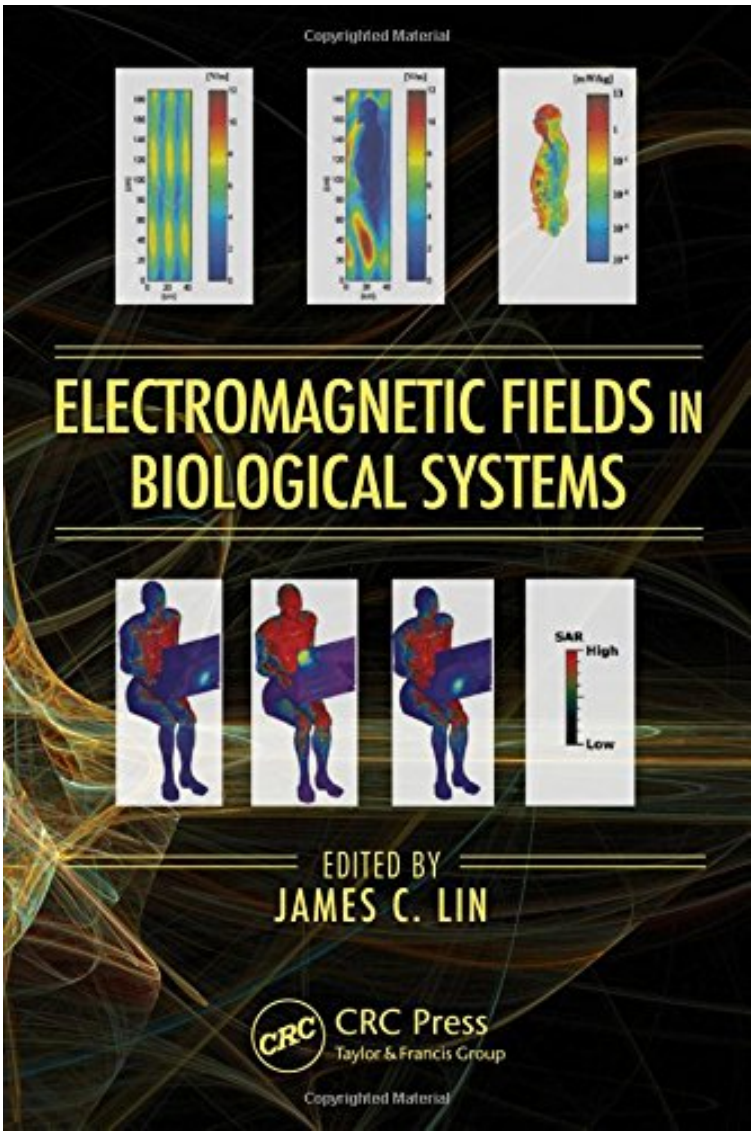

#3597481 in Books 2011-10-11Original language:EnglishPDF # 1 1.30 x 6.20 x 9.20l, 1.55 #File Name: 143985999X458 pages | File size: 61.Mb

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As wireless technology becomes more sophisticated and accessible to more users, the interactions of electromagnetic fields with biological systems have captured the interest not only of the scientific community but also the general public. Unintended or deleterious biological effects of electromagnetic fields and radiation may indicate grounds for health and safety precautions in their use. Spanning static fields to terahertz waves, Electromagnetic Fields in Biological Systems explores the range of consequences these fields have on the human body. With contributions by an array of experts, topics discussed include: Essential interactions and field coupling phenomena, highlighting their importance in research on biological effects and in scientific, industrial, and medical applications Electric field interactions in cells, focusing on ultrashort, pulsed high-intensity fields The effect of exposure to naturally occurring and human-made static, low-frequency, and pulsed magnetic fields in biological systems Dosimetry or coupling of extremely low frequency (ELF) fields into biological systems and the historical developments and recent trends in numerical dosimetry Mobile communication devices and the dosimetry or coupling of radiofrequency (RF) radiation into the human body Exposure and dosimetry associated with magnetic resonance imaging (MRI) and spectroscopy Available data on the interaction of terahertz radiation with biological tissues, cells, organelles, and molecules There is great potential for communication, industrial, scientific, and medical use of electromagnetic fields and radiation. To help advance knowledge of the biological effects of such fields and to exploit their potential medical applications, this book highlights critical issues relating to their effects on living systems.

About the AuthorDr. James C. Lin is a professor of electrical engineering, bioengineering, physiology, and biophysics at the University of Illinois in Chicago, where he has served as head of the Bioengineering Department, director of the Robotics and Automation Laboratory, and director of special projects in the College of Engineering.