



Physics of Thermal Therapy: Fundamentals and Clinical Applications (Imaging in Medical Diagnosis and Therapy)

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The field of thermal therapy has been growing tenaciously in the last few decades. The application of heat to living tissues, from mild hyperthermia to high-temperature thermal ablation, has produced a host of well-documented genetic, cellular, and physiological responses that are being researched intensely for medical applications, particularly for treatment of solid cancerous tumors using image guidance. The controlled application of thermal energy to living tissues has proven a great challenge, requiring expertise from multiple disciplines, thereby leading to the development of many sophisticated pre-clinical and clinical devices and treatment techniques. **Physics of Thermal Therapy: Fundamentals and Clinical Applications** captures the breadth and depth of this highly multidisciplinary field.

Focusing on applications in cancer treatment, this book covers basic principles, practical aspects, and clinical applications of thermal therapy. An overview of the fundamentals shows how use of controlled heat in medicine and biology involves electromagnetics, acoustics, thermodynamics, heat transfer, and imaging sciences. The book discusses challenges in the use of thermal energy on living tissues and explores the genetic, cellular, and physiological responses that can be employed in the fight against cancer from the physics and engineering perspectives. It also highlights recent advances, including the treatment of solid tumors using image-guided thermal therapy, microbubbles, nanoparticles, and other cutting-edge techniques.

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Physics of Thermal Therapy: Fundamentals and Clinical Applications (Imaging in Medical Diagnosis and Therapy) From CRC Press Bibliography

- Sales Rank: #4047046 in Books
- Published on: 2012-12-05
- Original language: English
- Number of items: 1
- Dimensions: 10.90" h x 1.10" w x 8.40" l, 2.40 pounds
- Binding: Hardcover
- 375 pages

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Editorial Review

Review

"This long overdue volume offers a richly enhanced update on these classic texts, and adds numerous chapters on new areas of research and clinical activity. It is a well-rounded, balanced presentation of the current status of the field of thermal medicine, and is packed with useful new material."

Medical Physics, June 2013

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