1. Record Nr. UNINA9910583022903321 Autore Ghassemi Majid **Titolo** Nano and bio heat transfer and fluid flow / / Majid Ghassemi, Azadeh Shahidian Pubbl/distr/stampa London, [England]:,: Academic Press,, 2017 ©2017 **ISBN** 0-12-803852-7 Edizione [1st edition] Descrizione fisica 1 online resource (162 pages): illustrations Disciplina 620.5 Soggetti Nanotechnology Thermotherapy Heat - Transmission Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Includes bibliographical references at the end of each chapters and Nota di bibliografia Nota di contenuto ; Machine generated contents note: ; 1. History of Bio-Nano Fluid Flow --; 1.1. Fluid Mechanics and Heat Transfer, Older Sciences --; 1.2. What Is Bioengineering? --; 1.3. History of Nanotechnology --References --: 2. Thermodynamics --: 2.1. Fundamental --: 2.2. Thermodynamics of Small Systems --; 2.3. Thermodynamics of Biosystems --: 2.4. Energy and Exergy Analysis of Human Body --References --; 3. Biosystems Heat and Mass Transfer --; 3.1. Introduction -- ; 3.2. Microscale Heat Transfer -- ; 3.3. Bioheat Transfer -- ; 3.4. Application of Magnetic Field in Hyperthermia -- ; 3.5. Application of Ultrasonic Wave -- References -- ; 4. Fluid Mechanics -- ; 4.1. Fundamental Concepts -- ; 4.2. Non-Newtonian Fluid -- ; 4.3. Blood Flow in Arteries and Veins -- ; 4.4. Pulsatile Flow -- References -- ; 5. Bio-Nanofluid Simulation -- ; 5.1. Nanofluid -- ; 5.2. Thermophysical Properties of Biofluid -- ; 5.3. Simulation and Modeling Tools for Nanofluid -- ; 5.4. Biofluid Simulation in Cardiovascular Systems -- ; 5.5. Simulation of Fluid Flow and Heat Transfer of Bio-Nanofluid -- References -- ; 6. Nanosystem Application in Drug Delivery --; 6.1. Introduction --; 6.2. Governing Equations --; 6.3. Application of Magnetic Nanoparticles in Drug Delivery -- ; 6.4.

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## Sommario/riassunto

Nano and Bio Heat Transfer and Fluid Flow focuses on the use of nanoparticles for bio application and bio-fluidics from an engineering perspective. It introduces the mechanisms underlying thermal and fluid interaction of nanoparticles with biological systems. This book will help readers translate theory into real world applications, such as drug delivery and lab-on-a-chip. The content covers how transport at the nano-scale differs from the macro-scale, also discussing what complications can arise in a biologic system at the nano-scale. It is ideal for students and early career researchers, engineers conducting experimental work on relevant applications, or those who develop computer models to investigate/design these systems. Content coverage includes biofluid mechanics, transport phenomena, micro/nano fluid flows, and heat transfer. Discusses nanoparticle applications in drug delivery Covers the engineering fundamentals of bio heat transfer and fluid flow Explains how to simulate, analyze, and evaluate the transportation of heat and mass problems in bio-systems