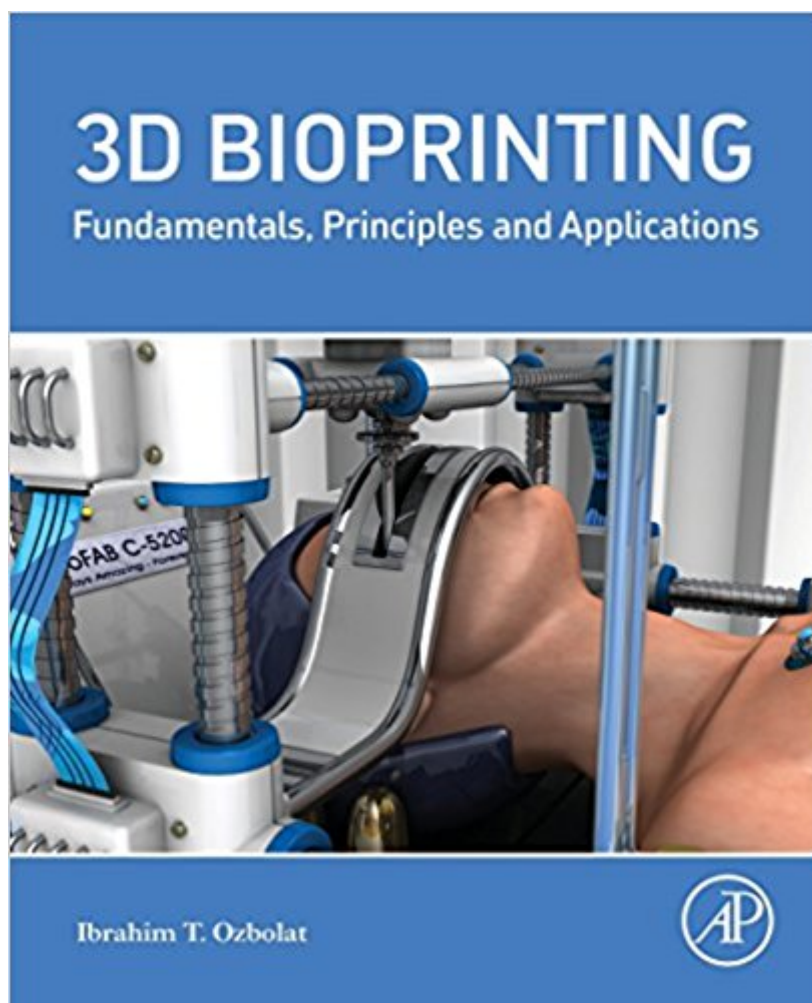




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3D Bioprinting: Fundamentals, Principles And Applications



Synopsis

3D Bioprinting: Fundamentals, Principles and Applications provides the latest information on the fundamentals, principles, physics, and applications of 3D bioprinting. It contains descriptions of the various bioprinting processes and technologies used in additive biomanufacturing of tissue constructs, tissues, and organs using living cells. The increasing availability and decreasing costs of 3D printing technologies are driving its use to meet medical needs, and this book provides an overview of these technologies and their integration. Each chapter discusses current limitations on the relevant technology, giving future perspectives. Professor Ozbolat has pulled together expertise from the fields of bioprinting, tissue engineering, tissue fabrication, and 3D printing in his inclusive table of contents. Topics covered include raw materials, processes, machine technology, products, applications, and limitations. The information in this book will help bioengineers, tissue and manufacturing engineers, and medical doctors understand the features of each bioprinting process, as well as bioink and bioprinter types. In addition, the book presents tactics that can be used to select the appropriate process for a given application, such as tissue engineering and regenerative medicine, transplantation, clinics, or pharmaceuticals. Describes all aspects of the bioprinting process, from bioink processing through design for bioprinting, bioprinting techniques, bioprinter technologies, organ printing, applications, and future trends. Provides a detailed description of each bioprinting technique with an in-depth understanding of its process modeling, underlying physics and characteristics, suitable bioink and cell types printed, and major accomplishments achieved thus far. Explains organ printing technology in detail with a step-by-step roadmap for the 3D bioprinting of organs from isolating stem cells to the post-transplantation of organs. Presents tactics that can be used to select the appropriate process for a given application, such as tissue engineering and regenerative medicine, transplantation, clinics, or pharmaceuticals.

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