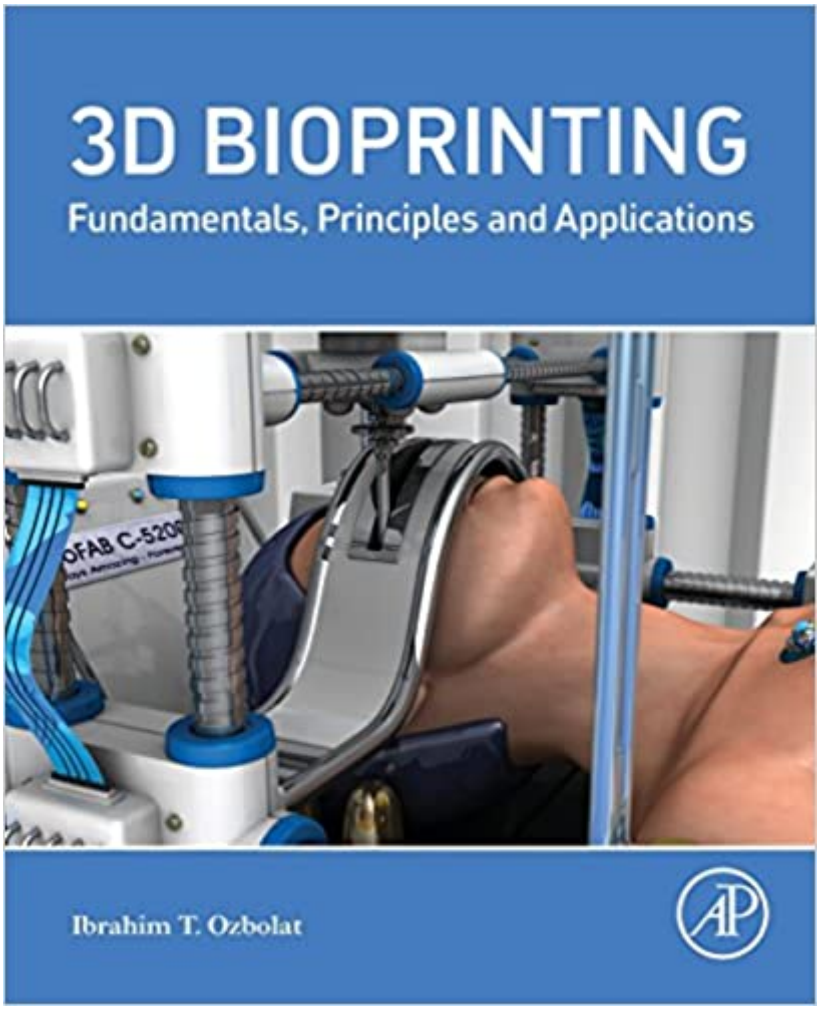
# 3D Bioprinting: Fundamentals, Principles And Applications



## 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 pharmaceutics.Describes all aspects of the bioprinting process, from bioink processing through design for bioprinting, bioprinting techniques, bioprinter technologies, organ printing, applications, and future trendsProvides 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 farExplains 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 organsPresents tactics that can be used to select the appropriate process for a given application, such as tissue engineering and regenerative medicine, transplantation, clinics, or pharmaceutics

## Book Information

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## Customer Reviews

Ibrahim Tarik Ozbolat is an associate professor of Engineering Science and Mechanics Department, Biomedical Engineering Department, the Huck Institutes of the Life Sciences, and the Materials Research Institute at The Pennsylvania State University, University Park, Pennsylvania, USA. Previously, he was a faculty member of The University of Iowa, Iowa City, Iowa, USA, and spearheaded Advanced Manufacturing Technology Group and the Biomanufacturing Laboratory. He received his PhD in tissue engineering from the Industrial and Systems Engineering Department at the University at Buffalo (SUNY) in Buffalo, New York, USA, and dual BS degrees in Mechanical Engineering and in Industrial Engineering from Middle East Technical University, Ankara, Turkey. Dr. Ozbolat is an internationally recognized expert in the area of 3D bioprinting. His research on bioprinting for tissue and organ fabrication has been published in several high quality of venues, received numerous national and international awards, and featured in national and international media, broadcast TVs, and press numerous times. He frequently gives invited talks at national and international forums, conferences, and seminars and organizes demonstrations and events to public and youth to encourage participation of futureâ ™s engineers in medicine, engineering, and science.

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