

Preface

Advances in technology and innovation have significantly influenced the progression of engineering disciplines, ushering in a new era of industrial development. This special edition offers an in-depth analysis of functional materials' properties and materials for specific applications such as orthopaedics and construction, water treatment technology, and mechatronic technologies. The articles within this edition provide insights into core principles, emerging trends, and practical applications of materials and technologies, serving as a valuable resource for researchers, practitioners, and students alike.

Chapter 1, "Functional Materials and Materials for Specific Applications", explores the principles and methodologies behind the development and application of advanced materials for specific fields of application. The presented works cover contemporary approaches in materials synthesis and production, their special properties, and their specific applications in various industries, including microelectronics, optoelectronics, and biomedical fields.

Chapter 2, "Water Treatment", focuses on advanced techniques for water purification. The chapter discusses assessing the removal efficiency of microplastics from water using electrocoagulation.

Chapter 3, "Materials and Technologies in Mechatronics", examines the selection and integration of bit-patterned medium within mechatronic systems for magnetic recording and contains an in-depth analysis of an integrated weighing system comprising load cells and ultrasonic sensors, used strategically at the quarry site.

This special edition will be a valuable tool for furthering both academic research and industrial innovations.