

Preface

The rapidly advancing field of materials science underpins many of the technological breakthroughs in modern manufacturing. This special edition is dedicated to investigating some of the areas within this discipline, focusing on the technological processes, properties study, and applications of various structural and special materials.

The first chapter examines the methods and techniques used to shape and enhance the properties of structural materials. This chapter highlights the processing technologies such as wire electrical discharge machining, grinding, and deep drawing.

The second chapter delves into the fabrication and mechanical properties analysis of polymer composites reinforced with carbon-flax fiber and glass as well as 3D-printed composite sandwich panels. These materials are indispensable across industries ranging from aerospace to civil engineering.

The next chapter covers materials that possess unique or enhanced properties, making them suitable for specialized applications. This chapter provides insight into the innovative approaches used to develop these materials and their impact on various technological fields.

The fourth chapter focuses on the critical role that materials play in the performance of supercapacitors. The chapter discusses the latest advancements in the production of electrode materials, which are essential for improving the functional capabilities of these devices.

The latest chapter explores the cutting-edge techniques used to synthesise some materials at the nanoscale and examines how these methods influence their properties and potential applications.

This special edition will be useful to a wide range of specialists, providing them with the knowledge needed to understand the ongoing innovations in materials science.