

# Preface

This special edition brings together recent research and developments across diverse materials science and engineering fields, highlighting traditional and emerging technologies. The contents are organised into four chapters, each reflecting a vital domain shaping modern scientific and industrial progress.

Chapter 1: Polymers and Composites focuses on designing, processing, and properties of polymeric systems and composite structures. Special attention is given to the balance between lightweight performance, durability, and sustainability, making these materials indispensable in various applications.

Chapter 2: Functional and Special Materials presents studies on materials engineered with unique properties and specific functionalities. These include nanostructured materials for optoelectronic applications and micro-encapsulated phase change materials added to concrete to improve thermal and mechanical performance.

Chapter 3: Additive Manufacturing explores the transformative role of 3D printing and related technologies in material processing. The chapter emphasises how additive manufacturing enables the production of complex geometries, customised components, and novel materials with tailored microstructures and properties.

Chapter 4: Chemical Engineering addresses innovations that underpin water treatment and effective fire extinguishing.

By uniting these themes, the special edition aims to provide readers with an integrated perspective on the interplay between materials development, processing technologies, and engineering applications. We hope the contributions included here will serve as valuable references for researchers, engineers, educators, and students.