Preface

The special edition presents a comprehensive overview of contemporary materials science, spanning metallic, polymeric, functional, and construction materials.

Chapter 1, Properties and Processing of Alloys and Steel, examines advances in alloy design, thermomechanical processing, and structure–property relationships that govern performance in demanding engineering applications, including high temperatures.

Chapter 2, Polymers and Composites, focuses on modern bio-based polymer systems and composite materials, addressing processing technologies, microstructural control, and mechanical and functional characteristics.

Chapter 3, Advanced Functional Materials, highlights materials engineered for specific properties, reflecting the growing importance of multifunctionality in emerging technologies.

Chapter 4, Green Concrete and Mortars, explores sustainable construction materials, emphasising environmentally responsible formulations, durability, and performance optimisation in civil engineering contexts.

This edition provides an integrated perspective on materials innovation, linking processing, structure, and properties across diverse material classes while addressing the technological and sustainability challenges of modern industry.