Preface

Structural materials and materials for specialised or functional applications are continuously evolving, driven by innovations in synthesis technologies and the demand for higher performance and durability. This special edition brings together results of key developments in both foundational and emerging aspects of engineering materials and their processing and applications.

The first chapter is focused on analysing structural metals' properties and processing technologies, offering a detailed examination of mechanical behaviour, alloy design, and processing techniques essential to their use in modern infrastructure and industrial applications. Understanding the relationship between microstructure, processing methods, and performance is critical for optimising the use of metals in demanding environments.

The second chapter covers the scope of specialised materials, advanced technologies, and innovative engineering approaches. This includes an exploration of novel composites, solutions in electronics, optoelectronics and innovative materials, additive manufacturing, and other cutting-edge methods reshaping the modern engineering landscape. These advancements reflect a growing trend toward transition to functionally oriented materials science.

The special edition is intended for students, researchers, and professionals in materials science and applied technologies. Bridging traditional knowledge with forward-looking approaches offers valuable insights into engineering practice's current and future state in materials science.