

# Preface

The special edition presents results of recent engineering research and technological advances in applied materials engineering, with an emphasis on the mechanical behaviour and integrity, reliability, and advanced processing technologies of engineering materials.

Chapter 1: Properties and Processing of Structural Metals focuses on the development, characterisation, and processing of alloys used in structural applications. Articles highlight the relationships between composition, microstructure, processing technologies, and mechanical performance of modern alloys.

Chapter 2: Fracture Mechanics and Failure Analysis of Materials and Structures presents studies on damage mechanisms, fracture behaviour, and failure prevention in materials and engineering structures. Emphasis is placed on analytical methods, experimental techniques, and case studies that support the development of safe and reliable designs in mechanical engineering.

Chapter 3: Additive Manufacturing explores advanced manufacturing technologies that enable the production of complex and customised components. The chapter addresses materials selection, process optimisation, microstructural control, and mechanical performance of additively manufactured parts.

This edition is intended to serve as a valuable reference for researchers, engineers, and students whose activity is related to supporting innovation in materials engineering.