# Preface

The rapid advancements in engineering and material sciences reflect the ever-growing demand for innovative solutions to address contemporary challenges in sustainability, efficiency, and resource utilization.

This special edition encapsulates research results across three areas of materials science: functional materials, green and high-performance building materials, and mineral mining and processing. The collected articles reflect the dynamic interplay between material innovation, environmental stewardship, and industrial applications.

The first chapter, "Functional Materials", delves into the development and application of materials with tailored properties for specific applications. It presents the study of the effect of silicon-based surfactant on properties of polyurethane foam filled with aluminium hydroxide in its synthesis and investigation of magnetic properties of magnetite nanoparticles prepared using the co-precipitation method.

The second chapter, "Mineral Mining and Processing", is focused on fractionation studies to increase the nickel grade of saprolite ores from the Wolo Mine Area, Kolaka Regency of Southeast Sulawesi, Indonesia.

The final chapter is dedicated to the shift towards sustainable construction practices. The properties and production techniques of some green building materials that maintain structural integrity while minimising ecological footprints are analysed here. It should be noted that topics such as recycled composites, energy-efficient solutions, and innovative green material engineering in construction underscore the critical role these approaches play in creating a sustainable environment.

This special edition serves as a useful resource for researchers and engineers committed to shaping a sustainable and technologically advanced future.