

# Preface

Materials science continues to be a driving force in advancing technology, blending innovation with practical applications to meet the demands of modern manufacturing. This special edition presents research results in three critical areas of materials engineering: polymers and composites, functional materials, and corrosion, protective coatings, and surface treatment.

The first chapter, "Polymers and Composites", is dedicated to the synthesis techniques, analysis of properties, and applications of some polymer and composite materials with a focus on their adaptability, durability and machinability.

The second chapter, "Functional Materials", delves into materials engineered to perform specific tasks that have special properties. This section emphasises the multifunctionality of these materials and their critical role in enabling next-generation technologies and engineering solutions.

The third chapter, "Corrosion, Protective Coatings and Surface Treatment", focuses on the actual challenge of materials corrosion. The research on corrosion mechanisms, design of advanced coating technologies, and surface treatments that extend material lifespans and machines, equipment and structures are presented here.

This special edition is an essential resource for researchers, engineers, and students seeking to deepen their understanding of these areas of materials science.