

# Preface

Materials science is a cornerstone of technological progress, stimulating innovation across industries, and enabling advancements of high levels of modern life. This special edition delves into three pivotal areas of materials research: structural steel and alloys, corrosion behaviour of metal materials and modern polymer materials, providing valuable insights into the properties, functionality, and possible methods of applications.

Chapter 1: Steel and Alloys explores properties and machinability of the diverse range of steel and alloy, their mechanical properties, and the transformative processes that enhance their performance in various applications, from construction to aerospace.

Chapter 2: Metal Corrosion examines the mechanisms and impacts of corrosion on metals, highlighting contemporary strategies for its prevention and mitigation to extend the lifespan and reliability of critical infrastructure.

Chapter 3: Polymer Materials focuses on the functional properties' versatility and innovation in the synthesis of polymers, showcasing their critical role in creating lightweight and durable products for a wide array of industrial and consumer needs.

We hope this special edition will serve as both a resource and an inspiration for further exploration in the field of materials science.