

Preface

The development of modern engineering and manufacturing relies on materials that meet increasingly demanding performance requirements. Among these materials, steel, alloys and protective coatings of their surfaces remain central to achieving strength, durability, and resistance in extreme environments. This special edition brings together research that deepens our understanding of both how structural metals behave and how they can be processed and protected against the effects of an aggressive environment.

Chapter 1: Properties and Processing of Alloys and Steel delves into the fundamental and applied aspects of metallic materials. It explores how alloy composition, microstructure, and processing routes influence mechanical performance, corrosion behaviour, and overall reliability. The studies featured here provide insights into modern innovations that are shaping the next generation of high-performance alloys and steels.

Chapter 2: Protective Coatings focuses on surface engineering approaches that extend the lifespan and functionality of materials. From thermal and chemical coatings to laser cladding, the research emphasises methods that enhance corrosion resistance and wear behaviour across a wide range of structural metals applications.

The special edition reflects research results that are essential for advancing industrial technologies and aims to provide both technical information and an inspiration for continued innovation in materials engineering.