

# Preface

The rapid advancements in materials science and engineering have paved the way for groundbreaking innovations in various spheres of engineering including tribology, wear resistance and fatigue behaviour analysis of tools and structural materials, and heat and mass transfer in engineering systems that play a significant role in enhancing the efficiency, durability, and reliability of manufacturing systems.

Chapter 1, "Tribological Performances, Wear Resistance, and Fatigue Behavior of Structural Metals", explores the key factors affecting the durability and performance of structural metals. It also covers the fundamental tribological properties, wear mechanisms, and fatigue behaviour of tools in structural materials processing. The chapter discusses the latest research trends and technological advancements aimed at improving materials and manufacturing objects' longevity and efficiency.

Chapter 2, "Heat and Mass Transfer in Engineering Systems", examines the essential principles governing heat and mass transfer processes in various engineering applications. This section highlights engineering concepts for analytical and numerical analysis of air and water flow behaviour in real-world industrial objects.

Presenting a blend of theoretical knowledge and practical applications, this special edition serves as a valuable resource for readers and will stimulate further exploration in the mentioned fields of engineering.