

# Preface

This special edition presents recent research results and engineering solutions in materials science and treatment technologies, with an emphasis on innovative processing techniques, the development of technological tools, and emerging applications in modern industries.

Chapter 1: Advanced Industrial Technologies in Alloy Processing explores the latest developments in aluminium-based alloys processing. Emphasis is placed on analysing forming methods that enhance performance and efficiency in the aviation and automotive industry.

Chapter 2: Specific Material Processing and Tool Development focuses on precision processing technologies and the design of advanced tools for turning and 3D printing.

Chapter 3: Materials and Technologies for Electronics and Photonics presents research on materials and fabrication techniques essential for modern electronic and photonic devices. Topics include semiconductors on silicon carbide, optical systems utilising nitrogen-vacancy colour centres in diamond, etc. and related technologies for integration solutions on chip systems.

Chapter 4: Advanced Technologies in Materials Science provides an overview of the features of cutting-edge methods that support effective research in materials science, facilitating the development of next-generation materials.

The special edition aims to serve as a valuable reference for researchers and engineers seeking insights into the latest trends and technologies shaping modern materials science.