

# Preface

This special edition presents a series of research results in material science, nanotechnologies and sustainable chemical production, giving readers an idea about the formation processes of modern industries.

Chapter 1 delves into the world of advanced nanomaterials, showcasing innovative synthesis techniques and wide areas of their applications. This chapter lays a comprehensive foundation for understanding nanotechnology's transformative potential.

Chapter 2 focuses on sustainable chemical technologies, addressing the pressing need for environmental safety-conscious methodologies. The green synthesis of titanium dioxide nanoparticles, waste application for fertilizer production, etc., are investigated in this chapter.

Chapter 3 explores the challenges of corrosion-resistant microstructures in friction-stir-treated magnesium alloys. By examining the mechanisms of corrosion degradation, it was underscored that the application of friction stir processing for refining the alloy's microstructure improves its corrosion performance.

Each chapter stands as a testament to the interdisciplinary efforts driving technical and technological innovations in manufacturing activity.

We hope this edition will inspire readers to further their knowledge and contribute to the evolving landscape of materials science and engineering.