Preface

This special edition presents research and development results in important areas of materials science that could be applied in various industries.

The first chapter explores the techniques behind brazing, a versatile joining process essential for creating strong, leak-proof joints in complex assemblies. This chapter discusses microstructural aspects of brazing stainless steels for high-temperature applications and analyses the effectiveness of micro-welding through direct and indirect heating from a view of sustainability.

Chapter 2, Corrosion Protection delves into techniques and materials that defend against corrosion, which is important for providing infrastructure longevity and safety. The analysis of corrosion inhibition performance on carbon steel in seawater using synthesised bio extract and properties of a zinc multifaceted layered barrier coating are presented here.

Chapter 3, Catalysts and Catalytic Processes focuses on catalysts and specific features of various catalytic processes, their role in accelerating chemical reactions, and, ultimately, improving the efficiency of chemical production.

Chapter 4, titled Computational Methods in Materials Science, contains articles exploring the microstructure, optic, photovoltaics properties, etc., of various materials, using numerical simulations and computational methods. By providing tools to develop and predict materials' behaviour and properties, computational methods enable research to be conducted faster and more precisely.

This special edition can become a useful referential resource for many specialists in materials science and engineering.