

# Preface

Rapid advancements in nanotechnology and materials science have paved the way for groundbreaking innovations in various industries. Functional nanomaterials and protective coatings play a crucial role in enhancing performance, durability, and efficiency in applications ranging from healthcare to aerospace. The research results provide insights into their fundamental properties and prospects of applications.

Chapter 1, "Functional Nanomaterials", explores the unique characteristics of silver nanoparticles and nanotube encapsulated tantalum disulfide nanoribbon and the applications of these nanostructured materials in sensing, etc. The research also covers the development of their synthesis techniques.

Chapter 2, "Protective Coatings", examines the importance of coatings in extending the lifespan and efficiency of machine parts, tools and structures. This section highlights various types of protective coatings, including coatings on biomaterials, corrosion-resistant coatings, and tool coatings for forming aluminium sheets.

This special edition is intended for researchers and engineers seeking a deeper investigation of functional nanomaterials and protective coating properties. We hope that this publication will inspire further innovation and development in these fields of materials science.