Preface

This special edition brings together the results of recent advances in materials science and related technologies, with a focus on corrosion protection, surface engineering, the investigation and creation of thin films, and catalytic processes that are shaping modern applications in engineering systems for energy conversion. The volume is divided into four topical chapters.

Chapter 1: Corrosion Resistance and Corrosion Protection presents studies on mechanisms of corrosion, evaluation methods, and strategies for enhancing the durability of materials. Special attention is given to protective approaches that extend the service life of structures and components.

Chapter 2: Specialised Coatings explores developments in advanced coating technologies designed to improve surface properties, such as wear resistance, and for antifouling in membrane technologies. The contributions highlight both traditional and emerging deposition techniques.

Chapter 3: Photocatalysis and Electrocatalysis for Energy Conversion examines catalytic materials and processes designed for efficient energy conversion. Topics include photocatalytic and electrocatalytic pathways for water splitting, fuel generation, and sustainable energy storage.

Chapter 4: Thin Films focuses on the synthesis, characterisation, and applications of thin film materials. Emphasis is placed on their role in electronics, optics, protective layers, and energy-related devices.

This special edition is designed as a valuable resource for specialists and students whose research and engineering activity involves innovation in advanced materials development and application.