

Preface

The special edition is dedicated to current issues of properties research and development of effective application methods of modern structural and functional materials and heat and mass transfer phenomena in various engineering systems.

The first chapter contains articles dedicated to investigating the corrosion properties of titanium and its alloy used in biomedical practice and the properties of bee wax propolis extract as a zinc corrosion inhibitor.

Modelling of the temperature dependence of the transport properties of glass-forming materials and numerical examination of the impact of changing thickness, defect density, and temperature on the efficiency of the perovskite solar cell by computational materials science approaches, analysis of properties and development of synthesis methods of various electrode materials and membranes for lithium-Ion battery and fuel cells, etc., are the mainstream topics of the next two chapters.

The last chapter is dedicated to researching heat and mass transfer phenomena in various engineering systems from power electronic devices to convective processes in multi-store buildings.

The presented special edition will be useful to specialists in materials science, energy storage and energy conversion, and thermal engineering.