

# Preface

This special edition contains research articles on actual issues of research and design in machinery and mechatronics as well as an analysis of composite materials properties.

The first two chapters are dedicated to the investigation of the thermal field of the supersonic missile rudder, damage analysis of the skid landing gear of the UAV, design and simulation of hydraulic tension fuzzy control of trawler winch, development of online quality control in the injection moulding machine, consideration on energy efficient routing protocols and security techniques for wireless sensor networks. Here are also presented analysis results of the performance of magnetostrictive material for wind-induced vibration power generator, design optimisation of direct-drive wheel hub motor for an electric scooter and method of automatic number plate recognition for the road payment system.

The last chapter includes the results of the study on the properties of composite and nanocomposite materials used in fuel cells, water electrolyzers, and stress detection based on mechanoluminescence. There also are presented the experimental investigations on the tensile and bending behaviour of natural filler particles reinforced polymer composites and a short review on the machining of natural fibre-reinforced composite by abrasive water jet.

This special publication will be useful to specialists in mechanical engineering, mechatronics, alternative energy and materials science.