# Table of Contents

## Preface

## Chapter 1: Advances in Engineering Design

Biomimetic Design of Lightweight Vehicle Structures Based on Animal Bone Properties  
Comparative Evaluation of Engineering Design Concepts Based on Non-Linear Substructuring Analysis  
M. Kajtaz, A. Subic and M. Takla  
Design of Exotic Materials Machining System  
J.P.T. Mo, S.L. Ding, A. Mackie, M. Brandt, S.J. Sun, R. Hoseinnejad and R. Webb  
Advances in Design and Materials for Indoor Sports Surfaces  
A. Walker and A. Subic  
Design Optimisation of Passenger Car Hood Panels for Improved Pedestrian Protection  
R. Krishnamoorthy, M. Takla, A. Subic and D. Scott  
Analysis of Deep Groove Ball Bearing Design for Assembly  
R. Mitrovic, A. Subic and I. Atanasovska  
Explicit Parametric Method for Optimal Spur Gear Tooth Profile Definition  
I. Atanasovska, R. Mitrovic and D. Momcilovic  
Investigation of the Effect of Rolling Bearing Construction on Internal Load Distribution and the Number of Active Rolling Elements  
R. Tomovic  
HCR Gearing and Optimization of its Geometry  
M. Rackov, M. Veres, Ž. Kanovic and S. Kuzmanovic

## Chapter 2: Advances in Engineering Materials and Manufacturing

High-Value SLM Aerospace Components: From Design to Manufacture  
M. Brandt, S.J. Sun, M. Leary, S. Feih, J. Elambasseri and Q.C. Liu  
Feasible Build Orientations for Self-Supporting Fused Deposition Manufacture: A Novel Approach to Space-Filling Tesselated Geometries  
M. Leary, M. Babaee, M. Brandt and A. Subic  
Materials and Engineering Design for Human Performance and Protection in Extreme Hot Conditions  
O. Troynikov, N. Nawaz and Y. Yermakova  
Investigation of Dental Biomaterials under Load Using a Digital Image Correlation System  
A.M. Lemic, L.T. Sojic, I. Tanasic, A. Subic and D. Grubor  
Assessment of the Effect of Pitting Corrosion on Fatigue Crack Initiation in Hydro Turbine Shaft  
R. Mitrovic, D. Momcilovic and I. Atanasovska  
Crossed Helical Gears with Wheels Manufactured from Sintered Steel with Pyrohydrolysis  
A. Miltenovic, R. Mitrovic and M. Banic  
Nanoscale Material Characterization under the Influence of Aggressive Agents by Magnetic Force Microscopy and Opto-Magnetic Spectroscopy  
A. Debeljkovic, I. Mileusnic, I. Djuricic, A. Dragicevic, I. Hut and S. Nijemcevic  
Fullerene Based Nanomaterials for Biomedical Applications: Engineering, Functionalization and Characterization  
Nanophotonic Rigid Contact Lenses: Engineering and Characterization  
D. Koruga, D. Stamenkovic, I. Djuricic, I. Mileusnic, J. Sakota, B. Bojovic and Z. Golubovoč
Chapter 3: Engineering Applications

Finite Element Analysis of Vertically Loaded Cylindrical Ti Implants

Integration of the Technical Product Risk Assessment within the ISO 31000 Enterprise Risk Management Concept
M. Djapic, P. Popovic and L. Lukic

Data Acquisition and Automatisation of a Conveyor Idler Test Stand

Experimental Investigation of Characteristics of Passive Safety Elements
J. Tanaskovic, Z. Miskovic, V. Lucanin and R. Mitrovic

Reliability Distribution in Mechanical Systems for Given Reliability and Cost
M. Ivanović

Reliability of Transportation Belt Rollers Used in Surface Coal Digging
G. Ivanović, R. Mitrovic and D. Jovanovic

Improvement of Auxiliary Mechanization Operations Management at an Open-Pit Coal Mine Based on a Process Approach with ICT Support