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Nota di contenuto	Refinement of AZ91 Alloy for Quality Casting Production -- Structural Optimization of Mechanical Elements Based on the Lattice Method Applying Additive Manufacturing with a Sustainable Approach -- Study of the Effects on Shear Behavior Due to the Variation in Printing Parameters for 3D Printed Parts -- Exploration of Microfluidic Technology for Additive Manufacturing: Devices for Precise Material Dispensing -- Computation Simulations of Basic and Specific Experiments of Composites -- Modeling Air Purification with Porous Materials -- Bentonite Microwave Modification and its Impact on Polymer Materials -- Influence of Carbon Black on Mechanical Behaviour of Polymer Blends Before and After Thermo-Oxidation Aging -- The Influence of Chemicals Order in Mixing Process on the Thermal History and Properties of the Elastomeric Blends -- A System for the Recycling of Gray Water Through the Use of Mucilage as a Flocculant (ACEX 257) -- Sensitivity Analysis of Acoustic Performance in Double Walls with Porous Layers Using the Finite Transfer Matrix Method and Kriging Metamodel -- Acoustic Interactions in a Rectangular Cavity with

a Forced Vibrating Top Elastic Plate Filled with a Compressible Fluid -- Machine Learning-Based Biomimetic Optimization Models for Engineered Materials -- Experimental Investigation of the Overall Efficiency of a Centrifugal Blood Pump Using Glycerin Solution and Xanthan Gum Solutions as Blood Analog Fluid -- Analysis of Hepatic Steatosis Using Neural Networks -- Biomechanical Evaluation of Upper Extremity Arthroplasty in Patients with Total Amputations and its Effects due to Phantom Limb Syndrome -- Generative Design for a Case of Tumoral Resection, Reconstruction of the Mandibular Continuity -- Biomechanical Study of Orthopedic Implants for Distal Fibula in Type B Fractures -- Kinematic Implications of a Wedging Vertebral Fracture in Spine Flexion Movements -- Methodology for the Development of Numerical Modeling of Different Human Anatomical Structures -- Comparative Biomechanical Analysis by Finite Element Method of Healthy Hip Versus Hip with Osteomyelitis in the Initial Phase -- Entropy and Complexity in the Analysis of the Neuromechanical Pattern of the Vocal Folds Affected by Smoking -- Two Modeling Approaches for an Epidemic Disease Spreading Process -- Innovations in Biomedical Engineering and Surgical Techniques for Improved Outcomes in Young Patients with Floating Hips: A Multidisciplinary Approach -- Innovative Solutions in Surgical Approaches for Joint Prosthesis Installation and Reconstruction -- Development of Biocompatible Implants Using 3D Printing Technology for Anterior Cervical Fusion -- Aerodynamic Analysis and Application of a High-Pressure Air Gun -- Implementation of a Monitoring System for a Hydroponic Microclimate Through the Internet of Things -- Universal Joint Modeling in Catia v5, Synopsis of the Kinematics: the First Step for Failure Analysis -- Constructing a Cost Effective Stroboscope for Calibration Laboratories Amidst Market Inflation and Export Challenges -- Optimizations of an Ergonomic Postural Auxiliary System for Industrial Applications -- Light Curves Variability in High Mass X Ray Binaries -- Analysis of Limitations of the EN ISO 11343: 2005 Standard Experimental Tests and Numerical Calculations -- Enhanced 1D Analytical Approach for Modeling the Effect of Transverse Cracking on Slender Structural Elements displacement -- Simulation of Energy Harvesting by Using Piezoelectric Materials -- Research of Nonlinear Output Regulation for Systems Described by Takagi Sugeno Fuzzy Descriptor Models and LMI for the Optimization and Implementation of a Clamp Mechanism -- Bottle Inspection and Classification System by Volume and Colour -- Solution of the Swanson Reaction-Diffusion Model via Split and Symmetries.

Sommario/riassunto

This book gives an update on recent developments in the mentioned areas of modern engineering design application. Different engineering disciplines such as mechanical, materials, computer, and process engineering provide the foundation for the design and development of improved structures, materials, and processes. The modern design cycle is characterized by an interaction of different disciplines and a strong shift to computer-based approaches where only a few experiments are performed for verification purposes. A major driver for this development is the increased demand for cost reduction and higher efficiency, which is also connected to environmental demands. One way to fulfil such requirements is lighter structures and/or new composite materials and structures. Another emerging area is the interaction of classical engineering with the health, medical, and environmental sector.