Editorial

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This special issue aims to explore the latest developments in nonlinear analysis and its diverse applications across engineering disciplines. From mechanical properties of innovative materials to the optimization of manufacturing processes and theoretical advancements in mathematical analysis, this issue will showcase high-quality, original research that highlights the interdisciplinary nature and practical implications of nonlinear methods.

Summary of Accepted Papers.

1. **Experimental Analysis of Mechanical Properties of Fiber Reinforced Cenosphere Lightweight Concrete with Higher Temperature Effect:** Investigation of temperature impacts on the mechanical properties of new composite materials.
2. **Exploring Nonlinear Behavior of Gasket Joints in DEF Dosing Units through Finite Element Analysis:** Finite element models to assess the nonlinear characteristics of gasket joints under operational stresses.
3. **Nonlinear Analysis of Steel Fiber Reinforced Recycled Aggregate Concrete under Compression, Tension, and Elevated Temperatures:** Comprehensive study on the performance of recycled concrete in extreme conditions.
4. **Mathematical Modelling for Failure Analysis of Composite Drive Shaft Using Modal Flexibility and Curvature Method:** Advanced modeling techniques to predict failures in composite materials.
5. **A Machine-based Robotic System for Precision Grinding Wheel Saw Replacement: Mathematical and Non-linear Analysis Perspective:** Integration of robotic systems and nonlinear analysis for precision tooling.
6. **An Analysis of Laser Welding Technology used for Joining Dissimilar Metals, Computational Parameters and Challenges:** Detailed examination of laser welding parameters for different metal types.
7. **Preparation and Analysis of New Hybrid PAEK Nano-composites Containing MWCNT, Inorganic and Organic Nano-particles:** Development and analysis of cutting-edge nano-composites.
8. **Application of Nonlinear Analysis in Evaluating Additive Manufacturing Process for Engineering Design Features:** A Study and Recommendations: Utilizing nonlinear analysis to enhance additive manufacturing techniques.
9. **Mathematical Analysis for Optimizing Electro Discharge Machining Parameters and Enhancing Hastelloy Machining Efficiency:** Optimization of machining processes through rigorous mathematical analysis.
10. **Experimental & CFD Analysis of Hybrid Air-Conditioning System Using Nanofluid via Heat & Mass Transfer Characteristics:** Exploring the efficiencies of HVAC systems enhanced by nanotechnologies.

11. **Experimental Analysis of Mechanical Tests on a Plate Composed of Banana Fibre:** Studying the mechanical properties of bio-composite materials.
12. **Enhancing Surface Integrity and Quality through Roller Burnishing:** A Comprehensive Review of Parameters Optimization, and Applications: Review of the techniques and benefits of roller burnishing in surface engineering.
13. **Review on Semi Active Suspension System for Ride Comfort:** Critical review on the impact of semi-active suspension systems on vehicle dynamics and passenger comfort.
14. **Strong Regular Domination in Litact Graphs**
15. **Periodic Behaviour of General Systems**
16. **Simulation of Hemoglobin and Oxyhemoglobin Dynamics Using a Robust Computational Technique**