

Table of Contents

Preface

Chapter 1: Fracture

Novel Exact Solutions of the Duffing Equation: Stability Analysis and Application to Real Non-Linear Deformation Tests A. Berezner, V. Fedorov, N. Perov and G. Grigoriev	3
Evaluation of Normal and Tangential Forces in Single-Lap Adhesive Joint Tests Using Optical Extensometry M.A. Martínez and J. Abenojar	6
Effect of Sub-Crack in Cohesive Zone on Mode I Fracture Toughness of a Strength Mismatched Bimetallic Body in SSY (LEFM) Regime: A Theoretical Assessment S. Bhat and V.G. Ukadgaonker	8
Relationship between Plastic Flow and Crack Closure by Numerical Analysis K. Masuda, T. Inoue, N. Oguma and S. Ishihara	9
Compressive Strength Behaviour of Plain Weave Fabric Composites under Uniaxial and Biaxial Loading Y. Şahin	10
Bone Drilling Simulation: Effects of Drill Bit Material on Bone Temperature M.F.A. Akhbar, S.M.S.A. Bin Syed Hamzah, A.A. Rahman and M.A. Jusoh	11
Effect of Adhesive Geometry on Nominal Lap Joint Strength Defined as Average Stress in JIS N.A. Noda, R. Takaki, Y. Suzuki and K. Oda	12
Identification of Ideal Adhesive Strength Using an Adhesive Specimen without Singular Stress Field K. Oda	14
Artificial Intelligence in Structural Engineering: From Physics-Informed Learning to Agentic Design Automation J. Lee	15
Rigidity-Induced Toughening Mechanism and Fracture Toughness Triangle Framework P.D. Lei	16
Vision-Based Autonomous Detection and Monitoring of Load-Induced Crack Propagation in Warehouse Concrete Floor Slabs S. Lee, J. Seong and J. Lee	17
1D-CNN-Based Crack Localization and Depth Estimation in Stepped Beams with Elastic Supports E. Sevilmiş, V. Kahya and S. Şimşek	18
Theoretical Prediction of Tensile Strength Property of Fiber Metal Laminates Y. Şahin and I.O. Yıldırım	20

Chapter 2: Fatigue

Fretting Fatigue Cracking Mechanisms of Additively Manufactured Superalloys with Gradient Grains Based on <i>In Situ</i> SEM Z.Y. Jiang, Z.T. Yu, Y. Yu and Q.A. Han	23
Systematization of Data Processing Aimed at Integrating Various Cyclic Loading Mode Fatigue Strength Diagrams of Smooth and Notched Specimens and Practical Applications H. Matsuno	24
Low Cycle Fatigue Behavior of Inconel 718: Insights from Stress Decomposition and Crystal Plasticity Modeling M.M. Ludhwani, F. Yoshinaka, R. Ueji and A.K. Kanjarla	25

Near-Threshold Behaviors of Fatigue Cracks Emanating from Artificial Defects in As-Cast and Precipitation-Hardened Cast Aluminum Alloys under Rotating Bending and Reversed Torsion	
T. Hashimoto, T. Matsuo, K. Takamatsu, N. Kai and J. Yamabe	26
Fatigue Crack Growth Behavior of Gray and Ductile Cast Irons under Continuous Hydrogen Charging	
K. Tanaka, T. Ogawa, T. Hashimoto and T. Matsuo	28
High-Cycle Fatigue Behaviour of Ni-Based Superalloy at 850°C	
A. Gupta, V. Singh, N. Paulose and G.S. Mahobia	29

Chapter 3: Wear

Drill Bit Wear Monitoring via Wavelet-Based Multiaxial Vibration Energy Characterizations	
C.H. Chin, S. Abdullah and H.J. Xu	33
Coupled Abrasive and Fatigue Wear Modeling of Blanking Punches for Prediction of Wear Using Linear and Nonlinear Wear Models	
D. Kim	35
Towards Sustainable Modular Tires: Experimental Validation of a Mechanically Interlocked Removable Tread System	
J. Abenojar, M.A. Martínez and D. García-Pozuelo	36
Wear Analysis of Crankshaft Journal Bearings Considering Spiral Oil Groove Design	
Z.N. Liu and X.H. Meng	38
Inverse Design and Optimisation of Lug-Pin Interfaces Using Deep Learning Surrogate Model	
D. Jayaraju and H. Murthy	39
Tribological Properties of the Selected Binary Ti-Fe Alloys Produced with Vacuum Arc Remelting	
I. Yadav, V. Jindal and K. Chattopadhyay	41
Effect of Fiber Orientation on Impact Behavior and Hardness of VARTM-Manufactured GFRP and CFRP Composites	
Y. Şahin and M. Abdel Wahab	42