

Table of Contents

Preface

Bending Fatigue Behavior of 7075-Aluminum Alloy	
E.V. Arcieri, S. Baragetti and E. Borzini	1
Effect of Water Temperature on Interfacial Shear Strength of Resin Particles Added CFRT_P	
H. Katogi, K. Takemura and M. Mochizuki	7
Investigation on Damage and Failure of Vinyl Composite Plate under Tensile Load	
Z.L. Chang, Y.L. Li and G.P. Zou	13
Influence of Thickness on Tensile Property of Copper Foil	
T. Fujii, K. Tohgo, Y. Noda, T. Yamada and Y. Shimamura	19
Trial Fabrication of Carbon Fiber-Reinforced Thermoplastic Honeycomb Sandwich Materials	
H. Takagi, K. Nishimura and A.N. Nakagaito	25
Disappearance of Martensitic Strengthened-Micro-Texture in Modified 9Cr-1Mo Steel Caused by Stress-Induced Acceleration of Atomic Diffusion at Elevated Temperatures	
T. Shinozaki, K. Suzuki and H. Miura	31
Cyclic Loading Behaviour of Double Strap Bonded Joints with CFRP and Aluminium	
H. Biscaia, R. Micaelo, C. Chastre and J. Cardoso	36
A Simple Analytical Approach for Creep Analysis of EB-FRP Systems	
H. Biscaia and C. Chastre	42
Stress Intensity Factors for Cracks Emanating from a Notch under Shear-Mode Loading	
J. Horníková, P. Šandera, S. Žák and J. Pokluda	48
Evaluation of the Apparent Interfacial Shear Strength of Nanocellulose/PVA Composites	
J. Andersons, I. Filipova, M. Kirpluks and U. Cabulis	54
Modelling Cracked Cross-Ply Laminates with Delamination Buckling	
A. Köllner, M. Kashtalyan, I. Guz and C. Völlmecke	60
Characterization of Adhesion Properties by Delamination of Ceramic-Metal Interfaces in Four Point Bending	
M. Lederer, A.B. Kotas, G. Khatibi and H. Danninger	66
Determination of Mixed-Mode Cohesive Zone Failure Parameters Using Digital Volume Correlation and the Inverse Finite Element Method	
J.Y.S. Li-Mayer, M. Martinez, J. Lambros and M.N. Charalambides	72
Failure Analysis of the Restraining System of the Directional Rudder of an MD80 Aircraft	
J. Coronado, K. Mendoza and M. Martinez	77
A Quasi-Static Delamination Model with Rate-Dependent Interface Damage Exposed to Cyclic Loading	
R. Vodička and K. Krajinová	84
Flexoelectric Effect for Cracks in Piezoelectric Solids	
J. Sladek, V. Sladek, M. Wünsche and C.L. Tan	90
SEM Study of the Influence of Microstructure on Low Cycle Fatigue Crack Growth in Martensitic Steel I	
T. Eterashvili, T. Dzigrashvili and M. Vardosanidze	96
Thermo-Mechanical Behaviour of a Composite Stiffened Panel Undergoing the Tail-Pipe Fire Event	
A. Riccio, A. Sellitto, S. Saputo, G. Conte and M. Zarrelli	101
A Numerical Study on Multi-Terrain Impacts of an Aeronautical Fuselage Section	
A. Riccio, S. Saputo, R. Cristiano and A. Sellitto	107
Application of Singular Integral Equation to a Crack Moving near a Hole in a Two-Dimensional Infinite Plate	
M. Arai and K. Yoshida	113
Interrelationship between Creep Deformation and Damage for Advanced Creep-Resistant Steels	
V. Sklenička, K. Kuchařová, M. Kvapilová, L. Kloc, J. Dvořák and P. Král	119

Investigation on Strength and Damage Test of Composite Blade for Vertical Axis Wind Turbine	125
H.B. Park	
Transfer Matrix Analysis for Curved Beam Structure	131
S. Kuroda, M. Arai and K. Ito	
Comprehensive Numerical Simulation of Stress and Damage Fields under Thermo-Mechanical Loading for TBC-Coated Ni-Based Superalloy	137
H. Katori, M. Arai and K. Ito	
Mechanical Response and Damage of Woven Composite Materials Reinforced with Fique	143
O.A. González-Estrada, G. Díaz-Ramírez and J.E. Quiroga Mendez	
Damage Assessment of Spinal Bones due to Prostate Cancer	149
S.A.A. Parra, O.A. González-Estrada and J.E. Quiroga Mendez	
Damage in Fibreglass Composite Laminates Used for Pipes	155
J.S.B. León, O.A. González-Estrada and A. Pertuz	
Evaluation of Tensile Properties and Damage of Continuous Fibre Reinforced 3D-Printed Parts	161
O.A. González-Estrada, A. Pertuz and J.E. Quiroga Mendez	
Cohesive Zone Modeling of Stable Crack Propagation in Highly Ductile Steel	167
A. Burgold, S. Roth and M. Kuna	
Creep Damage Mechanisms in Cast Cobalt Superalloys for Applications in Glass Industry	173
M. Kvapilová, B. Podhorná, J. Dvořák, P. Král, J. Zýka, K. Hrbáček and V. Sklenička	
Mixed-Mode Stress Intensity Factors in a Homogeneous Orthotropic Medium Loaded by a Frictional Sliding Rigid Flat Stamp	179
K.B. Yilmaz, M.A. Güler and B. Yildirim	
Theoretical Model to Adhesion Failure in Granular Materials	185
M. Buonsanti, G. Leonardi, F. Scopelliti and F. Suraci	
Finite Element Analysis for Palm Oil Bunches Press Shaft Fractured in Service	191
O. Bohórquez, S.A.A. Parra, A. Pertuz and O.A. González-Estrada	
Investigation of Integral Composite T-Joints under Mixed Mode Loading	197
F. Nolte, A. Hannig and P. Horst	
A Nonaffine Molecular Chain Network Model for Elastomeric Gel	203
I. Riku, M. Ueda, T. Sawada and K. Mimura	
Modeling, Simulation, and Experimentation of Fatigue Behavior in Amorphous Solids	210
T. Barriere, G. Cheng and S. Holopainen	
Design Methodology for Gear Design of a Formula One Racing Car: A Modelling Procedure Based on Finite Element	217
S. Mantovani, F. Calacci, S. Fanelli and M. Parlamento	
Research on Strength Design of Channel Clips for Suspended Ceilings	223
S. Enoki, Y. Shibayama, M. Saito, J. Ito, Y. Nakamura and T. Ohata	
An Influence of Tightening Torque Stored in Tightening Process on Fatigue Strength of Aluminum Bolts	229
S. Hashimura, T. Nutahara and K. Kamibeppu	
Structural Health Monitoring of Scarfed Repaired Composite Panels Using Inject-Printed Patterns	235
D.G. Bekas, Z. Sharif Khodaei and M.H. Aliabadi	
Application of Embedded Element in the Short Fiber Reinforced Composite	241
J.H. Gao, X.X. Yang and L.H. Huang	
The Role of Post Service Heat Treatment on the Contributions of Creep Deformation and Fracture to Service Life of AISI Type 316H Steel Components	247
X. Warren, B. Chen, I. Griffiths and P.E.J. Flewitt	
A NURBS-BEM Application in Continuum Damage Mechanics	253
V. Mallardo, E. Ruocco and G. Beer	
Effect of Stress Ratio on Stress Intensity Factor of Type I Crack in A7N01 Aluminum Alloy	259
Y.T. Li, y. wang and L. Yang	
The Effect of Explosion in a Tunnel Tube on its Damage	265
P.P. Prochazka and M.J. Válek	

Computational Analysis of Crack-Like Defects Influence on the Open Cell Ceramic Foam Tensile Strength	271
O. Ševeček, Z. Majer, P. Marcián, L. Bertolla and M. Kotoul	
Strength Development Characteristic of Cementless Mortar for Repair of Concrete	277
G.S. Ryu, K.T. Koh, G.H. An, H.Y. Kim and S. Choi	
Study on Nondestructive Inspection Method of Single-Lap Adhesive Joints to Eliminate the Influence of Inspector's Behavioral Characteristics	283
G. Hotta, Y. Ohbuchi and H. Sakamoto	
Effect of Water Immersion on Interfacial Strength of a Metal/Epoxy Joint	289
Y. Yamazaki and K. Kudo	
Stressed Cylinder Dispersion Curves Based on Effective Elastic Constants and SAFE Method	295
J.E. Quiroga Mendez, O.A. González-Estrada and D.F. Villegas	
Glass Bottle Fracture Behavior by Underwater Shock-Wave - Effect of Micro-Bubble on the Fracture Behavior -	303
Y. Ohbuchi, S. Sugahara, S. Tanaka, S. Enoki, G. Hotta and H. Sakamoto	
Thermo-Mechanical Analysis of the Exhaust Manifold of a High Performance Turbocharged Engine	307
M. Lorenzini, M. Giacopini and S.G. Barbieri	
Mechanical Properties and Fatigue Resistance of 3D Printed Inconel 718 in Comparison with Conventional Manufacture	313
I. Černý, J. Kec, T. Vlasák, L. Remar, M. Jersák and M. Zetek	
Experimental Verification of Dents Effect on the Structural Integrity of Pipeline DN 300	319
J. Kec, I. Černý, J. Luštinec, M. Poupa, R. Pavelková and J. Janovec	
Numerical Modelling of Cylindrical Specimen under Mixed-Mode Loading Conditions	325
O. Slávik, P. Hutař, M. Berer, A. Gosch, F. Arbeiter, G. Pinter and L. Náhlík	
Compression-Loaded Cracked Cylinder - Stress Intensity Factor Evaluation	331
P. Dlhý, J. Poduška, L. Náhlík, M. Berer, A. Gosch, G. Pinter and P. Hutař	
Effect of High Temperature Environment on the Tensile Strength of Carbon Fiber/Highly Heat Resistant Polyamide Resin	337
K. Tanaka, T. Takei and T. Katayama	
Guided-Waves in a Low Velocity Impacted Composite Winglet	343
A. de Luca, D. Perfetto, G. Petrone, A. de Fenza and F. Caputo	
Effect of the Type of Silica Fume and Filler on Mechanical Properties of Ultra High Performance Concrete	349
K.T. Koh, S.H. Park, G.S. Ryu, G.H. An and B.S. Kim	
Convergence of the BEM Solution Applied to the CCFFM for LEBIM	355
M. Muñoz-Reja, L. Távara and V. Mantič	
Optimization of Dynamic Cornering Fatigue Test Process of Aluminum Alloy Wheels	361
A. Pastirmaci, A. Kara and C. Kalender	
Effect of Press Condition on the Mechanical Properties of GFRTM Molded by the Melted Thermoplastic-Resin Transfer Molding	367
K. Tanaka, A. Hirata and T. Katayama	
Mixed-Mode Stress Intensity Factors for Tubes under Pure Torsion Loading	373
J.G.D. Rodríguez, L.F.N. Marques and R.E. Guzmán	
Simulation of Inner Rim Compression Test of Aluminum Alloy Wheels	379
A. Kara and O. Daysal	
Analysis of the Analytical and Numerical Studies for Crack Widening in Lamellar Metal-Ceramic Composites	385
R. Piat and P.A. Happ	
A Model for High-Cycle Fatigue in Polycrystals	391
I. Benedetti and V. Gulizzi	
A Computational Study on Crack Propagation in Bio-Inspired Lattices	398
R. Manno, W. Gao and I. Benedetti	
Cutting of a Thick Glass Plate by Using Hot Wire	405
Y. Miyashita, Y. Kurabe, T. Hiromoto and Y. Otsuka	
Effect of CNT Grafting on Carbon Fibers on Impact Properties of CFRTP Laminate	410
K. Tanaka, K. Uzumasa and T. Katayama	

Optimization of Design Parameters of Fracture Resistant Piezoelectric Vibration Energy Harvester	416
Z. Majer, O. Ševeček, Z. Machů, K. Štegnerová and M. Kotoul	
Bending Properties of CFRTP Laminate Using CNT Grafted Carbon Fiber	423
K. Tanaka, M. Kawabe and T. Katayama	
How Material Properties Affect the Thermal Distortion of a Mold for Continuous Casting of Steel	429
L. Moro, J. Srnec Novak, D. Benasciutti and F. de Bona	
Influence of the Deformation Rate on the Delamination of Laminated Composite Materials	435
C. López-Taboada, G. Castillo-López, H. Zabala, L. Aretxabaleta and F. García-Sánchez	
Key Aspects in 3D Fatigue Crack Closure Numerical Modelling	441
A. González-Herrera, D. Camas and J. García-Manrique	
Prediction of the Critical Energy Release Rate of Nanostructured Solids Using the Laplacian Version of the Strain Gradient Elasticity Theory	447
M. Kotoul, P. Skalka, T. Profant, M. Friák, P. Rehák and P. Šesták	
Stress Sensitivity of the T(0,1) Mode Velocity for Cylindrical Waveguides	453
J.E. Quiroga Mendez, O.A. González-Estrada and Y.R. Ordóñez	
Measuring Wear in a Fretting Test with a Confocal Microscope	461
G. Jordano, C. Navarro, J. Vázquez and J. Domínguez	
Characterization and Modelling of Multiple Intralaminar Cracking Initiation under Tensile Quasi-Static and Fatigue Loading	467
H. Ben-Kahla and J. Varna	
Numerical Analysis of the Pivot Node in Fracture Problems	473
J. García-Manrique, D. Camas, A. Lima-Rodríguez and A. González-Herrera	
A Microstructural Model for Micro-Cracking in Piezoceramics	479
I. Benedetti, V. Gulizzi and A. Milazzo	
Robust and Reliability-Based Design Optimization of a Composite Floor Beam	486
F. Sbaraglia, H. Farokhi and M.H. Aliabadi	
Cold-Drawn Pearlitic Steels as Hierarchically Structured Materials: An Approach to Johann Sebastian Bach	492
J. Toribio	
Meshfree Continuum Damage Model for Twill Composites	498
L. Li, P.H. Wen and M.H. Aliabadi	
Prediction of Fatigue Life of Structural Steel S355-J2G3 with SK Critical Plane Model	504
A.S. Cruces, P. Lopez-Crespo, S. Sandip and B. Moreno	
Investigation of the Biaxial Behaviour of 316 Stainless Steel Based on Critical Plane Method	510
A.S. Cruces, P. Lopez-Crespo, B. Moreno, S. Bressan and T. Itoh	
An Innovative Secondary Bonding of Sensors to Composite Structures for SHM Application	516
N. Yue, Z. Sharif Khodaei and M.H. Aliabadi	
On the Thickness Dependence of ILTS in Curved Composite Laminates	523
P.L. Zumaquero, J. Justo and E. Graciani	
An Effective Impact Detection Method for Composite Curved Panel	529
A.H. Seno, Z. Sharif Khodaei and M.H. Aliabadi	
Effectiveness of RAPID and SSM Algorithms on Composite Scarf Repair	535
F. Lambinet, Z. Sharif Khodaei and M.H. Aliabadi	
Development of Gun Bullet Protect Board - Gun Bullet Experiment and Analysis -	541
S. Fukuzaki, Y. Ohbuchi, K. Gotoh, H. Hata, T. Katayama, E. Nakamachi and H. Šakamoto	
Strain Injection Techniques for Modeling 3D Crack Propagation	547
I.F. Dias, J. Oliver and O. Lloberas-Valls	
Shortening the Long Creep Strength Evaluation Period with the Assistant of Stress Relaxation Behavior	553
T.S. Cao, C.Q. Cheng and J. Zhao	
An Approach to Predict Creep Strain and Rupture Life of Heat Resistant Steels Based on ZC Parameter	559
J. Zhao, T.S. Cao, X.Y. Liu and C.Q. Cheng	
Elastic Properties and Failure Behavior of Tiled Laminate Composites	564
W. de Corte, A. Jansseune, W. van Paepegem and J. Peeters	

Numerical Analysis of the Failure Behavior of a C50/60 Brazilian Disc Test Specimen with a Central Notch	
P. Miarka, S. Seitl and W. de Corte	570
A Thermodynamically Consistent CZM for Low-Cycle Fatigue Analysis	
F. Parrinello, I. Benedetti and G. Borino	576
Accurate SIF Analysis of a Partially Cylindrical Side Crack Opened by Far-Field Tension	
Y. Sonobe, T. Ino, A. Saimoto, T. Takase, A. Koyama and G. Shatil	583
Fatigue Assessment of a Slender Footbridge Based on an Updated Finite Element Model	
J. Pérez-Aracil, A.M. Hernandez-Díaz, J.F. Jiménez-Alonso and F.J. Puerta-Lopez	589
A FEM Simulation of the Mechanical Interaction between Asphalt Mixture and Geogrid at Micro-Scale	
F. Suraci, M. Buonsanti, G. Leonardi and R. Palamara	595
Comparison of Fracture Tests Numerical Models Created with Real Material Properties	
J. Klon and J. Sobek	601
Crack Surface Frictional Contact Modelling in Piezoelectric Materials	
L. Rodríguez-Tembleque, F. García-Sánchez and A. Sáez	607
Statistical Inference of the Equivalent Initial Flaw Size Distribution Using the Boundary Element Method under Multiple Sources of Uncertainty	
L. Morse, Z. Sharif Khodaei and M.H. Aliabadi	613
Corrosivity Evaluation of Steel Members near the Air-Liquid Interface Using a Ground Corrosion Sensor	
S. Kainuma and M.Y. Yang	619
A Boundary Element Model for Structural Health Monitoring Based on the S0 Lamb Wave Mode	
J. Li, Z. Sharif Khodaei and M.H. Aliabadi	625
A Phase Field Staggered Algorithm for Fracture Modeling in Heterogeneous Microstructure	
K. Seleš, T. Lesičar, Z. Tonković and J. Sorić	632
Guided Wave Based Damage Detection in a Composite Plate with an Opening	
N.G. Ming and Z. Sharif Khodaei	638
Numerical Study of the Progression of the Micromechanical Debonding Damage in Composites	
M.L. Velasco, F. París and E. Correa	644
Modelling the Mechanical Response of Adobe Components under Uniaxial Loading	
T.L. Piani, J. Weerheim, L. Koene and L.J. Sluys	650