

Fracture, Damage and Structural Health Monitoring

Procedia Structural Integrity Volume 52

London, United Kingdom
12 – 14 September 2023

ISBN: 978-1-7138-9500-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) The Authors. Published by Elsevier Ltd.
Creative Commons Attribution 4.0 International License.
License details: <http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination, and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact the publisher:

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Limits of Applicability of LEFM: Numerical Investigation on the Crack-Tip-Yielding in a Hollow-Cylindrical Specimen	1
<i>D. Amato, L. Federico, E. Armentani, R. Citarella</i>	
Effect of Aging on the Low Cycle Fatigue Performance of a Low Alloy Steel.....	12
<i>Long Jin, Shang-Lin Zhang, Xu-Xin Wang, Qi-Wei Yin, Fu-Zhen Xuan</i>	
Effect of Viscoelastic Coating on Lamb Wave Propagation in Plates	20
<i>Carlos A. Galán Pinilla, Jabid Eduardo Quiroga, Darío Yesid Peña Ballesteros, Carlos Andrés Tobar Cañas, Cesar Augusto Acosta Minoli</i>	
Critical Analysis of MP-TP Wedge Connection Concept for Application in Offshore Wind Turbines	28
<i>Alessandro Annoni, Ali Mehmanparast</i>	
Fatigue Lifetime Assessment and Crack Propagation of Ni-Based VDM Alloy 699 XA Produced by Additive Manufacturing	43
<i>Tomáš Vražina, Ivo Šulák, Benedikt Nowak, Bhupesh Verma, Tomáš Kruml</i>	
Energy Absorption Evaluation of Multiple Fabrics Under Hypervelocity Impact Loading	52
<i>Huadong Xu, Jia Zhou, Xu Cao, Wenxiang Liu, Changqing Miao</i>	
Multi-Scale Modelling and Micromechanical Properties of Semi-Crystalline Polymers.....	63
<i>Chenxu Jiang, Jia Zhou, Peng Jiang, Changqing Miao</i>	
Retrofitting and Strengthening of an RCC Building – a Case Study of Mixed Housing Typology.....	72
<i>Rakesh Katam, Sairam Neridu, Ajay Kumar Sreerama, Venkata Dilip Kumar Pasupuleti, Prafulla Kalapatapu</i>	
Evaluation of High-Temperature Creep Behaviour in Cast GTD 111 Nickel-Based Superalloy	89
<i>Marie Kvapilova, Petr Kral, Jiri Dvorak, Pavel Hutar, Vaclav Sklenicka</i>	
Exploration of Hybrid Steel / Fibre Composite Laminates for Web-Core Sandwich Panel Footbridges.....	99
<i>Wouter De Corte, Jordi Uyttersprot, Wim Van Paepegem</i>	
Mechanical Degradation and Fatigue Life of Amorphous Polymers.....	105
<i>Thierry Barriere, Xavier Gabrion, Najimi Imane, Sami Holopainen</i>	
High Cycle Fatigue Analysis with Induced Residual Stress Based on Fracture Mechanics	111
<i>Xuran Xiao, Volodymyr Okorokov, Donald Mackenzie</i>	
Evaluation of Offshore Wind Turbine Leading Edge Protection Coating Failure Mode Under Rain Erosion	122
<i>Quaiyum M. Ansari, Fernando Sánchez, Luis Doménech-Ballester, Trevor M. Young</i>	
Crack Propagation Arrest by the Joule Heating in Micro/Nano-Sized Structures	133
<i>Jan Sladek, Vladimir Sladek, Miroslav Repka</i>	
High-Temperature Fatigue and Creep Performance of Additively Manufactured NiCu-Based Alloy	143
<i>Ivo Šulák, Alice Chlupová, Tomáš Záležák, Ivo Kubena, Tomáš Kruml</i>	

Stress-Strain Response and Fatigue Lifetime of EEQ-111 Superalloy in Cyclic Loading at High Temperatures	154
<i>Ivo Šulák, Karel Obrlík</i>	
Mode I Fracture Toughness Behaviour of Recyclable Piezoelectric Composites	165
<i>Miray Yasar, Vishnu Prasad, Yuan Hu, Neal Murphy, Alojz Ivankovic</i>	
Comprehensive Evaluation Method of Bond Strength in Ultrasonic Welding for CFRTP	176
<i>Minori Isozaki, Maruri Takamura, Shinichi Takeda, Jun Koyanagi</i>	
Identification of Internal Damage in CFRP Cross-Ply Laminates Subjected to Cyclic Loadings by Thermal Measurement.....	187
<i>Jun Koyanagi, Honoka Yoshida, Mayu Morita, Minori Isozaki</i>	
Molecular Dynamics Simulation Considering Covalent Bond Dissociation for Lignin-Based Composite Materials.....	195
<i>Mayu Morita, Yutaka Oya, Nobuhiko Kato, Kazuki Mori, Jun Koyanagi</i>	
Study on Robust Loss Function for Artificial Neural Networks Models in Reliability Analysis	203
<i>Wu Zonghui, He Jian, Sun Xiaodan</i>	
Crack Growth Analysis of XH73M Nickel Alloy Under Fatigue, Creep-Fatigue Interaction and Thermo-Mechanical Conditions	214
<i>Valery Shlyannikov, Aleksandr Sulamanidze, Dmitry Kosov</i>	
Damage Classification of a Bolted Connection Using Guided Waves and Explainable Artificial Intelligence	224
<i>Muping Hu, Nan Yue, Roger M. Groves</i>	
Mixed Mode Fracture Mechanics Characterization of DCB-UBM Sandwich Specimen Under Dynamic Loading	234
<i>Chen Zhou, Jian He, Yulin Wang</i>	
A Computational Approach of Dynamic Quasi-Brittle Fracture Using a Phase-Field Model	242
<i>Roman Vodicka</i>	
Damage Modelling and Analysis of Composite Blade for Wind Turbine	252
<i>Haseung Lee, Hyunbum Park</i>	
Study of Creep Damage in P92 Steel Using Acoustic Emission	259
<i>Jiri Dvorak, Petr Kral, Vaclav Sklenicka, Marie Kvapilova, Marie Ohankova</i>	
Distress Diagnosis and Retrofitting of Twin Culvert Bridge	267
<i>Sairam Neridu, Rakesh Katam, Govardhan Polepally, Ajay Kumar Sreerama, Prafulla Kalapatapu</i>	
Model-Driven Structural Health Assessment of Masonry Bridge: A Preliminary Study.....	280
<i>Govardhan Polepally, Venkata Dilip Kumar Pasupuleti, Prafulla Kalapatapu</i>	
50 Years of Controversy on Fatigue Crack Closure.....	293
<i>D. Kujawski, A. K. Vasudevan, R. E. Ricker, K. Sadananda</i>	
Modelling Strategies to Simulate the Fluid-Structure Interaction of Amphibious Aircraft Float Structure	309
<i>Muhammad Raihan Firdaus, Muhammad Rizki Mahalik, Annisa Jusuf, Satrio Wicaksono, Tatacipta Dirgantara</i>	

Analysis of Mutual Interference Among Line Cracks in an Orthotropic Plate	323
<i>Akihide Saimoto, Yohei Sonobe, Takuya Kitamura, Yuichirou Ambe</i>	
A Numerical and Experimental Investigation on the Mechanical Response of Composite Specimens Subjected to Low Velocity Impacts	340
<i>Valerio Acanfora, Andrea Sellitto, Francesco Di Caprio, Marco Mallardo, Aniello Riccio</i>	
Constitutive Modelling of Sintered Steel by Phase-Field Method	348
<i>Tomislav Polancec, Tomislav Lesicar, Jakov Rako</i>	
Simulation of Mechanical Effects of Hydrogen in Bicrystalline Cu Using DFT and Bond Order Potentials	356
<i>Vasileios Fotopoulos, Alexander Shluger</i>	
Numerical Studies of Crack Propagation in Composites Reinforced by Irregular Particles.....	366
<i>Thi Ngoc Diep Tran, Romana Piat</i>	
Fatigue Behavior of High Strength Steels Under Various Levels of Corrosion.....	376
<i>Lucie Malíková, Anna Benešová, Mohammad Al Khazali, Stanislav Seitl</i>	
Some Problems of Reliability of Structural Health Monitoring	382
<i>Vitalijs Pavelko</i>	
Biaxial Compression Failure of Brittle Foams: A Transfer Learning-Based Strategy.....	391
<i>Vinit Vijay Deshpande, Romana Piat</i>	
Particle Shape Complexity Reduction for Estimation of Effective Elastic Properties of the Composite.....	401
<i>Pascal Alexander Happ, Romana Piat</i>	
Porous Sericin/PVA/Moringa Oleifera Hydrogels: Physical Properties and Hyperelastic Model	410
<i>Dita Puspitasari, Ahmad M. Anwar, Della S. G. Ananda, Ghullam Reza, Lia A. T. W. Asri</i>	
FE Modelling Techniques for the Simulation of Guided Waves in Plates with Variable Thickness	418
<i>Donato Perfetto, Claudio Pezzella, Vincenzo Fierro, Nima Rezazadeh, Giuseppe Lamanna</i>	
Health and Load Monitoring in an Aluminium Plate Through Guided Waves.....	424
<i>Alessandro De Luca, Aldo Minardo, Antonio Aversano, Raffaele Vallifluoco, Francesco Caputo</i>	
On the Determination of the Reference Temperature T0 of the Master-Curve Method Using Subsized Compact Tension Specimens.....	430
<i>Ding Zhou, Dongyang Jiang, Philippe Späthig, Hans-Peter Siefert</i>	
Low-Velocity Impact Damage of Foam-Core Sandwich T-Joints: Numerical Study	438
<i>Satrio Wicaksono, Lailatul Fitriyah, Annisa Jusuf, Muhammad Raihan Firdaus, Ditho Ardiansyah Pulungan</i>	
Discussion of Contributions of the Direct Flexoelectric Effects and Strain Gradient Effects to Fracture Criteria of Flexoelectric Solids.....	455
<i>T. Profant, M. Kotoul, J. Sládek, V. Sládek, J. Pokluda</i>	
Quantifying the Influence of SEN(B) Sample Thickness and Constraint on the Fracture Toughness of Pressure Vessel Steel SA508	472
<i>Ben M B Sargeant, Paul A Hooper, Catrin M Davies</i>	

Flexural Performance and High Temperature Resistance of Slurry-Infiltrated Fiber-Reinforced Cementitious Composite Materials	480
<i>Cheolwoo Park, Yong Sik Kwon, Min Kyu Ju, Eunho Lee, Seungwon Kim</i>	
Experimental and Numerical Investigation of Axial Load Capacity for Box-Type Railway Bridges	487
<i>Govardhan Polepally, Sairam Neridu, Venkata Dilip Kumar Pasupuleti, Prafulla Kalapatapu</i>	
Numerical Modelling of the Cavitation Damage in the Conrod Big End Bearing of a High-Performance Internal Combustion Engine.....	506
<i>Fabio Renzo, Matteo Giacopini, Enrico Bertocchi, Daniele Dini</i>	
Exploiting Global Digital Image Correlation for Crack Initiation.....	517
<i>Sylvia Feld-Payet, Vincent Bonnand, Didier Pacou</i>	
Investigation on the Low Cycle Thermal Fatigue of a Hybrid Power Unit Transmission Clutch	523
<i>Saverio Giulio Barbieri, Valerio Mangeruga, Andrea Piergiacomi, Matteo Giacopini</i>	
Parametric Investigation of Stiffened Panel Subjected to Compressive Loads: Influence of Initial Delamination Length on Damage Behaviour	535
<i>Angela Russo, Andrea Sellitto, Concetta Palumbo, Rossana Castaldo, Aniello Riccio</i>	
Recovery of Interlaminar Tensile Stresses in Curved Laminates Subject to Biaxial Flexure: The Case of an Elastically Induced Curvature Purposely Misaligned with the Principal Directions of Initial Curvature	543
<i>Lorenzo Marchignoli, Enrico Bertocchi, Matteo Giacopini, Valerio Mangeruga</i>	
Unsupervised Damage Localization in Composite Plates Using Lamb Waves and Conditional Generative Adversarial Networks.....	551
<i>Marc Parziale, Luca Lomazzi, Zahra Rastin, Marco Giglio, Francesco Cadini</i>	
Numerical Simulation of Aluminum Plate Damage Subjected to Hydrodynamic Impact.....	560
<i>Leonardo Gunawan, Raihan Hakim, Satrio Wicaksono, Annisa Jusuf, Ditho Ardiansyah Pulungan</i>	
Development of an Innovative Extension for Fatigue Life Monitoring Using a Piezoelectric Sensor	570
<i>Aliakbar Ghaderiaram, Reza Mohammadi, Erik Schlangen, Mohammad Fotouhi</i>	
SPH Method for Crack Growth Modelling Using Particle Deletion and Interaction Pair-Based Framework.....	583
<i>Made Wiragunarsa, Lavi Rizki Zuhal, Tatacipta Dirgantara, Ichsan Setya Putra</i>	
Optimizing Sensor Paths for Enhanced Damage Detection in Large Composite Stiffened Panels - A Multi-Objective Approach.....	594
<i>Llewellyn Morse, Ilias N. Giannakeas, Vincenzo Mallardo, Zahra Sharif-Khodaei, M. H. Aliabadi</i>	
Determination of Mixed Mode Delamination Crack Initiation Using Acoustic Emission Measurements.....	600
<i>Ruben I. Erives, Ashish K. Bangaru, Malcolm M. Gugan</i>	
Effect of Outdoor Exposure on Tensile Property of Synthetic Leather for Personal Mobility	611
<i>Hideaki Katogi</i>	
A Model for Polycrystalline Thermo-Mechanical Homogenisation and Micro-Cracking.....	618
<i>Marco Lo Cascio, Vincenzo Gulizzi, Alberto Milazzo, Ivano Benedetti</i>	

Meshless Variational Method Applied to Mixed-Mode Dynamic Stress Intensity Factors	625
<i>J. C. Wen, L. Ning, C. G. Zhang, P. H. Wen, M. H. Aliabadi</i>	
Barely Visible Impact Damage Detection and Location on a Real Scale Curved CFRP Fuselage Panel with Optical Fibre Bragg Grating Sensors.....	647
<i>Sidney Goossens, Kirsa Muñoz, Miguel Jiménez, María Mora Mendíaz, Francis Berghmans</i>	
Effect of Detection and Localization Uncertainty on Damage Size Estimation Using Guided Wave Based SHM.....	655
<i>Ilias N. Giannakeas, Zahra Sharif Khodaei, Ferri M. H. Aliabadi</i>	
Impact Identification Based on Surrogate-Assisted Efficient Global Optimisation	667
<i>Dong Xiao, Zahra Sharif Khodaei, M H Ferri Aliabadi</i>	
Investigation of Baseline-Free Techniques for Damage Localisation on Anisotropic Composite Structures.....	679
<i>Hongmin Zhu, Zahra Sharif Khodaei, M. H. Aliabadi</i>	
Reliability-Based Fracture Analysis for Shallow Shell Structure with the Dual Boundary Element Method	690
<i>Mengke Zhuang, Llewellyn Morse, Zahra Sharif Khodaei, M. H. Aliabadi</i>	
A Hybrid Method Based on Vibration and Guided Waves for Damage Detection and Localization	699
<i>Yuhang Pan, Zahra Sharif Khodaei, M. H. Aliabadi</i>	
Strain Measurement Consistency of Distributed Fiber Optic Sensors for Monitoring Composite Structures Under Various Loading.....	709
<i>Yingwu Li, Zahra Sharif Khodaei</i>	
Smart Patch Repair Solution for Cure Monitoring of Bonded Repairs in Composite Aircraft Structures.....	719
<i>Francisco De Sá Rodrigues, Dimitrios G. Bekas, Zahra Sharif Khodaei, Ferri M. H. Aliabadi</i>	
The Sensitivity Analysis of Group Velocity to Temperature Variations in Composite Structures	730
<i>Feifei Ren, Ilias N. Giannakeas, Ferri Alibadi, Zahra Sharif Khodaei</i>	
Numerical Recipes of Virtual Element Method for Phase Field Modeling of Brittle Fracture.....	740
<i>Tong-Rui Liu, Fadi Aldakheel, M. H. Aliabadi</i>	
FFT-Based Homogenisation for Thin Plate Structures	752
<i>Haolin Li, Zahra Sharif Khodaei, M. H. Aliabadi</i>	
Demonstration of the Avoidance of Brittle Fracture of a Radioactive Material Transport Package During an Impact Event.....	762
<i>A. D. Cummings, C. A. Berry</i>	
Influence of Placing Positions of PZT Transducers in Thick Composites on Ultrasonic Guided Waves	785
<i>Tianyi Feng, M H Ferri Aliabadi</i>	

Author Index