

Table of Contents

Preface

Waveform Effect on the Low Cycle Fatigue Behavior of AISI 304 Stainless Steel at High Temperature	
S.R. Lee, H.J. Lee, J.O. Chung, S. Oh, C. Huh and D. Yoon	1
Low-Cycle Fatigue Life Prediction of Circumferentially Notched Component Based on Elastic-Plastic Stress Strain Analysis	
K. Hatanaka, T. Fujimitsu and S. Shiraishi	7
Strain Behavior in the Vicinity of Crack Tip in Fatigue Fracture of Polymer and Its Life Estimation	
A. Shimamoto, E. Umezaki and J.S. Hawong	13
Viscoelastic Analysis of Residual Stress and Deformation of PP Resin in Cooling Process	
M. Shimbo, S. Sugimori, Y. Miyano and T. Kunio	19
A Theoretical Study on Creep Damage Detection by Ultrasonic Wave Measurement	
M. Matsubara, A. Nitta, S. Sakai and N. Fujinawa	25
Influence of Non-Metallic Inclusions on Fatigue Strength of High Manganese Steel	
I. Maekawa, J.H. Lee, H. Shibata and S. Nishida	31
Effects of Small Defects and Nonmetallic Inclusions on the Fatigue Strength of Metals	
Y. Murakami	37
Fatigue Properties of Nitrided Ti-6Al-4V Alloy	
T. Morita, M. Shimizu, K. Kawasaki, T. Chiba and T. Chiba	43
Relation between Critical Size of Inclusion Responsible for Fatigue Failure and Inclusion Size Distribution	
Y. Kuroshima, M. Shimizu and K. Kawasaki	49
K_{II} Influence on the Shape of Caustics in CT and CC Specimens	
O.S. Lee and M.K. Han	55
Accuracy Improvement Technique for Measuring Stress Intensity Factors in Photoelastic Experiment	
T.H. Baek and C.P. Burger	63
Stress Intensity Evaluation for Surface Crack with Use of Boundary Element Method and Influence Function Method and the Surface Crack Extension Analysis	
R. Yuuki and K. Ejima	69
Determination of Thermal Stress Intensity Factors for Symmetric Lip Cusp Crack by Boundary Element Method	
K.Y. Lee and Y.H. Cho	75
Development of the Method to Evaluate the Fatigue Life of Spot-Welded Structures by Fracture Mechanics - Development of BEM-Spot System to Analyze the Stress Intensity Factors by Use of Boundary Element Method	
R. Yuuki and T. Ohira	81
Efficient Boundary Element Analysis of Stress Intensity Factors for Interface Cracks in Dissimilar Materials	
S. Cho and R. Yuuki	87
An Investigation on the Behavior of Longitudinally Cracked Pipe Wall due to Thermal Stripping	
Y.J. Yu, S.H. Park and G.H. Sohn	93
Direct Observation of Crack Tip Phenomena and a Dislocation Model of Fracture	
C.G. Park, C.S. Lee and Y.W. Chang	99
Stress Corrosion Cracking Behavior of Al-Li Alloys	
S. Ohsaki and T. Takahashi	107
Stress Corrosion Cracking of High Strength Steels and Their Weldments in Synthetic Sea Water	
J.K. Lim, T. Shoji, J.W. Who, S.H. Chung and H. Takahashi	113
Relation between Test Temperatures and Notch Tip Radii in Tensile Fracture Manner of Center Notched CFRP	
Y.H. Kim, H. Nisitani, R. Murakami, T. Nonomura and S. Okada	119

Notched Strength of Woven Laminate Composites Containing Circular Holes	125
H.G. Kim, W. Hwang and K.S. Han	
Failure Criteria for Symmetric Balanced Angle-Ply Laminates under Uniaxial Loading	131
C.W. Bert and K.N. Cho	
Failure Criteria for Carbon/Epoxy Composites under Biaxial Loading	137
J.Y. Park, H. Hwang, H.C. Park and K.S. Han	
The Micromechanics Study of Crack Propagation in a Cross Ply E-Glass/Epoxy Laminate under Hydrochloric Acid	143
H. Sekine, H. Suzuki, T. Miyanaga and J.H. Chen	
A Study on the Fracture Mechanics of Orthotropic Plate under Pure Shear Force (A Study on the Development of the Pure Shear Force Device for Orthotropic Materials)	149
J.S. Hawong, S.H. Choi, K.H. Lee, A. Shimamoto and S. Takahashi	
Effect of Vickers Indented Load and Microstructure on Hardness, Bending Strength and Fracture Toughness in Sintered Silicon Carbide Ceramics	155
Y. Ochi, S.K. Sasaki, A. Ishii and M. Kawai	
Effect of Stress Corrosion Cracking on Fracture Strength of Si₃N₄	161
H. Kobayashi, Y. Arai, S.C. Hwang and S. Kani	
Particle Impact Damage in Silicon Carbide	167
A. Suzuki, T. Natsumara, S. Sugiyama, T. Teramae and S. Hamada	
Particle Impact Damage on Ceramics	173
I. Maekawa, H.S. Shin and H. Miyata	
Mechanics Approach to Fracture Strength of Ceramics/Metal Joints	179
H. Kobayashi, Y. Arai, H. Nakamura and M. Nakamura	
The Evaluation of the Strength of Adhesive Joints by Application of Fracture Mechanics	185
N.Y. Chung, R. Yuuki, H. Ishikawa and S. Nakano	
Strength Evaluation of Carburized Gear Teeth Based on Fracture Mechanics	191
M. Kato, K. Inoue, G. Deng and B.S. Jeong	
The Effect of Microstructural Variation on the Mechanical Properties of Ti-10V-2Fe-3Al Alloy	197
C.S. Lee, S.J. Kim, C.G. Park and Y.W. Chang	
Effects of Austempering on Fatigue Crack Propagation Resistance of Ductile Cast Irons	203
Y. Sugiyama, K. Asami and Y. Nakazawa	
The Effect of Load Ratio and Grain Size on Fatigue Crack Growth Rates in Nickel Base Superalloy AP-1	209
S. Kim and J.F. Knott	
An Analysis on Surface Crack Growth under Rotary Bending Fatigue in Terms of Fracture Mechanics	215
H. Ogawa and K. Hatanaka	
Fatigue Crack Propagation between Holes or Ingrediants	221
J.U. Cho, S.C. Kim and O.S. Lee	
Surface Crack Growth Behavior in Corrosion Fatigue of Off-Shore Structural Steel	227
J.G. Lee, T. Shoji, H. Takahashi, J.K. Lim and S.H. Chung	
Material Degradation and Strength Characteristics of a Long-Term Operated HP-IP Rotor	233
T. Ogata and A. Nitta	
Analytical Evaluation of Remaining Service Life of Fossil Steam Turbine Rotor and Casing	241
S. Shiotani, Y. Takahashi, T. Fujioka, M. Matsubara, T. Ogata and A. Nitta	
Standardization of Grain Boundary Etching Test Method for Evaluating High Temperature Material Degradation	247
F. Nogata, K. Seo, S.H. Chung, J.J. Lee, H. Takahashi and K. Tamagawa	
The Evaluation for In-Service Material Degradation of Superheater Tubes of Fossil Boiler	253
J.K. Kim, T.R. Chung, J.K. Lim and S.H. Chung	
DBTT Estimation of Ferritic Low Alloy Steels in Service Plant by means of Small Punch Test	259
T. Matsushita, M.L. Saucedo-Muñoz, Y.H. Joo and T. Shoji	
Fatigue Crack Behavior under Constant Stress and Two-Step Block Stress	265
S.H. Song and K.R. Lee	
Effect of Single Overload on Retardation Behavior in 7075-T73 Aluminium Alloy	271
J.K. Kim and B.H. Park	

Estimation Method of Elastic-Plastic Fatigue Crack Growth Rates under Variable Amplitude Loadings	277
M. Jono and A. Sugata	
Fatigue Crack Growth and Closure through a Tensile Residual Stress Field under Random Loading	283
J.S. Kim, C.Y. Kim and J.H. Song	
Fatigue Crack Acceleration and Retardation in Glassy Polymers due to a Single Peak Overload	289
T. Shiraishi and Y. Soyama	
Effects of Accelerated Thermal Aging and Prestressing on Fracture Toughness of A533B-1 Steel	295
H. Nakumura, H. Kobayashi, T. Shimizu, S. Kanno, M. Saito, M. Asano and H.K. Yoon	
Effect of Temperature on the Elastic-Plastic Fracture Toughness in A516 Gr70 Steel	301
Y.S. Choi, W.H. Yang, Y.J. Kim and C.S. Seok	
Elastic-Plastic Fracture Toughness Test under Mixed Mode Loading	307
K. Tohgo and H. Ishii	
Study on the Ductile Fracture of Aluminium Alloys - Observation of the Fracture Process by FRASTA and FEM Simulation -	313
M. Kikuchi and H. Miyamoto	
Maximum Load Prediction in Plane-Strain Ductile Fracture	319
I. Gu	
The Near Crack Tip Deformation and Fracture Initiation of a Ductile Material under Mixed Mode Loading	325
S. Aoki, K. Kishimoto and T. Yoshida	
A Study of Mixed Mode Fracture Criterion - Maximum Tangential Strain Energy Density Criterion	331
J.M. Koo and Y.S. Coy	
Impact Force and Elastic Response of Tapered Bars in Collision with Rigid Wall	337
M. Daimaruya and H. Kobayashi	
Dynamic Crack Propagation in a Micropolar Medium	343
S.Y. Han, M.N.L. Narasimhan and T.C. Kennedy	
Fatigue Crack Closure Monitoring at Elevated Temperatures Using Laser Interferometric Displacement Gage	349
K. Ogura and I. Nishikawa	
Effect of Crack Surface Oxidation on Near-Threshold Fatigue Crack Growth Characteristics in A508-3 Steel at Elevated Temperature	355
H. Kobayashi, H. Tsuji and K.D. Park	
The Fatigue Crack Propagation Behavior of the Submerged Arc Welded Plate	361
S.H. Song and H. Kim	
Prediction of Fatigue Crack Growth Rate in Residual Stress Fields	367
A. Todoroki and H. Kobayashi	
Stress Analysis around Micro Surface Cracks by FEM Modeling of 3 Dimensions	373
S.H. Song and J.B. Kim	
Fracture Mechanics Analysis of the Mode I Crack in the Variable Thickness Plate Having Fillet	379
Y.S. Choi, W.H. Yang and M.R. Cho	
Efficient Improvement of Virtual Crack Extension Method by a Derivative of the Finite Element Stiffness Matrix	385
H. Ishikawa, S. Nakano, R. Yuuki and N.Y. Chung	
Application of the J_k Integral to Arc Cracked Rotating Disks	391
S.J. Chu and C.S. Hong	
Discontinuity of Stress Intensity Factor for Kinked Interfacial Crack under Anti-Plane Shear	397
K.S. Lee, S.R. Choi and Y.Y. Earmme	
Thermoelastic Analysis of an Interfacial Crack in Bimaterial	403
T.W. Kim, S. Im and Y.Y. Earmme	
Development of Inelastic Constitutive Relations	409
Y.W. Chang, C.S. Lee and C.G. Park	

Axisymmetric Contact Problem in Consideration of Tangential Displacement	417
T. Shibuya, T. Koizumi and J. Fukuchi	
A Study on Width Spread in 2-High Rolling of Rectangular Bars	423
S.G. Yoon and D.W. Kim	
Deformation of Circular Tubes in Lateral Compression	429
H. Kobayashi and M. Daimaruya	
Fracture Strength Evaluation of Welded Joint in Steels by Using Small Punch Test	435
D.Y. Lyu, H.S. You, H.D. Jung, J.K. Lim and S.H. Chung	
An Improvement of the Fatigue Strength of the Spot-Welded Lap Joint	441
D.H. Bae, N. Tomioka, J. Niisawa and H. Kitagawa	
A Study on the Effect of the Building up by Welding on the Fatigue Fracture Behaviors for the Forged Steel	447
Y.S. Kim, J.H. Kim and M.S. Han	
Load and Strain Histories for CFRP Laminates under Low Velocity Impact	453
J. Kook, M. Suzuki, T. Adachi, S. Ujihashi and H. Matsumoto	
Impact Damage Energy of Laminated Composite Beams Subjected to Transverse Impact	459
K.C. Park and M.S. Kim	
Evaluations of Performances to Plasma Disruption and Neutron Irradiation of Graphites and C/C-Composites as First Wall Components for Fusion Reactor Devices	465
S. Sato, A. Kurumada, K. Kawamata, R. Ishida, T. Takizawa and K. Teruyama	
A Fabrication Method of Aluminium-Short Fiber Alumina Metal Matrix Composites Processed by Compocasting	471
H.C. Lee and M.S. Kim	
Small Punch Test for Ceramic Composites at Very High Temperature	477
M. Saito, T. Hashida and H. Takahashi	
Fracture Behaviors and Mechanical Properties of Metal Matrix Composites	483
T. Lim, C.S. Lee, Y.H. Kim, K.C. Lee and K.S. Han	
Ultrasonic Testing of Closed Cracks	489
M. Saka	
Measurements of Residual Stress in the Field of the Stress Gradient by the Hole Drilling Method	495
T.S. Lee, B.K. Choi, S.Y. Jeon and H.A. Moon	
Crack Prevention of S-Tech Wood during Autoclave Drying by means of Accoustic Emission Technique	501
K. Tamakawa, K. Sato, H. Takahashi, K. Homma and S. Yunome	
A Study on the Development of Orthotropic Photoelastic Material Having Arbitrary Size and Direction	507
J.D. Parks, J.S. Hawong, J.D. Kwon and S.H. Choi	
One-Point-Bend Impact Testing of Ceramic Material	513
K. Kishimoto, S. Takahashi and S. Aoki	
Evaluations of the Critical Current Densities of Carbon Brushes by Thermal Shock Fracture Testings	519
S. Sato, A. Kurumada, K. Kawamata, J.K. Lee, N. Takahashi, N. Yamashita and Y. Shou	
Probabilistic Life Assessment for Surface Cracked Body by an Influence Function Method	525
M. Shiratori and T. Miyoshi	
The Probabilistic Prediction of the Fatigue Crack Propagation Life of a Semi-Elliptical Surface Crack	531
H.Y. Yoon and H. Okamura	
Fatigue Crack Initiation and Growth Life Prediction with Statistical Consideration	537
J.D. Kwon, S.H. Choi, S.G. Kwak and K.O. Chun	
Nondestructive Detection and Evaluation of Materials Degradation of 2.25Cr-1Mo Steel by means of Electrochemical Method	543
Y. Watanabe and T. Shoji	
Degradation Problems in Life Prediction	549
H. Kitagawa, J.D. Kwon and S.H. Choi	
Fracture Behavior and Acceptance Size of Flaw for Pressurized Piping	555
K. Hasegawa, S. Kanno, T. Shimizu, N. Gotoh and T. Saitoh	