

International Conference on Material Strength and Applied Mechanics (MSAM 2018)

IOP Conference Series: Materials Science and Engineering
Volume 372

Kitakyushu, Japan
10 – 13 April 2018

ISBN: 978-1-5108-6485-6
ISSN: 1757-8981

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© (2018) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

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

Volume 372

**2018 International Conference on Material Strength and Applied Mechanics
(MSAM 2018)**

10–13 April 2018, Kitakyushu City, Japan

Accepted papers received: 22 May 2018

Published online: 12 June 2018

Preface

[2018 International Conference on Material Strength and Applied Mechanics \(MSAM 2018\)](#)

[Peer review statement](#)

Papers

[An evaluation of fatigue limit of notched specimen of a C/C composite](#)

C Makabe, M Fujikawa and M S Ferdous.....1

[Practical method for analyzing singular index and intensity of singular stress field for three dimensional bonded plate](#)

Tatsujiro Miyazaki, Takuma Inoue and Nao-Aki Noda.....9

[Fatigue and fracture mechanical behavior for Chinese A508-3 steel at room temperature](#)

K K Shi, H Xie, B Zheng and X L Fu.....17

[Mechanical and physical properties of selected magnesium base nanocomposites](#)

Z Drozd, Z Trojanová, P Lukáč, M Kučeráková and T Václavů.....22

[Influence of crack-like surface defects on the fatigue limit of nitrocarburized carbon steel](#)

Y Yamada, H Eto, J Konya and K Takahashi.....29

[3D finite element analysis of tightening process of bolt and nut connections with pitch difference](#)

X Liu, N-A Noda, Y Sano, Y T Huang and Y Takase.....35

[Suitable pitch difference to realize anti-loosening performance for various bolts-nuts diameter](#)

S Kubo, K Tateishi, N-A Noda, Y Sano, Y Takase and K Honda.....42

[Effect of hydrogen on void initiation in tensile test of carbon steel JIS-S25C](#)

S Sugawa, N Tsutsumi and K Oda.....50

[Special sliding door with storable handrail to support senior and handicapped persons to walk by themselves](#)

K Saitou, N-A Noda, Y Sano, Y Takase, K Murai, Z F Wang, S Q Li, X Liu, H Tanaka and Y Kubo.....57

[Rolling contact fatigue strengths of shot-peened and crack-healed ceramics](#)

K Takahashi and T Oki.....63

[Relationship between notch strengthening threshold and mechanical property for ductile cast iron](#)

T Ikeda, N-A Noda, Y Sano, T Umetani and N Kai.....70

[CFD-PBM coupled simulation of a nanobubble generator with honeycomb structure](#)

F Ren, N A Noda, T Ueda, Y Sano, Y Takase, T Umekage, Y Yonezawa and H Tanaka.....76

[Fracture mechanics analysis of cracked structures using weight function and neural network method](#)

J G Chen, F G Zang, Y Yang, K K Shi and X L Fu.....84

[Strength evaluation of butt joint by stress intensity factor of small edge crack near interface edge](#)

T Sato, K Oda and N Tsutsumi.....92

[Evaluation of adhesive scarf joint strength by using singular stress field of small interface crack](#)

S Haraga, N Okazaki, K Oda and N Tsutsumi.....99

[Experimental study on the effect of shape of bolt and nut on fatigue strength for bolted joint](#)

T Matsunari, K Oda, N Tsutsumi, T Yakushiji, N A Noda and Y Sano.....105

[Scaling analysis and SE simulation of the tilted cylinder-interface capillary interaction](#)

S Q Gao, X Y Zhang and Y H Zhou.....112

[Design and performance of honeycomb structure for nanobubbles generating apparatus having different cell dimensions](#)

T Ueda, H F Zhai, F Ren, N-A Noda, Y Sano, Yasushi Takase, Y Yonezawa and H Tanaka.....124

[Effect of tempering treatment upon the residual stress of bimetallic roll](#)

Y Sano, N-A Noda, Y Takase, R Torigoe, K Tsuboi, M R Aridi, Y Sanada and L Y Lan.....130

[Study on coming out of the shaft from ceramic sleeve in terms of the residual displacement](#)

G W Zhang, N-A Noda, Y Sano and H Sakai.....136

[Structural analysis and design for the development of floating photovoltaic energy generation system](#)

S J Yoon, H J Joo and S H Kim.....142

[Delamination of plasters applied to historical masonry walls: analysis by acoustic emission technique and numerical model](#)

A Grazzini, G Lacidogna, S Valente and F Accornero.....149

[Finite element analysis of the axial stiffness of a ball screw](#)

L-X Zhou and P-Y Li.....156

[Research and application of key technology of electric submersible plunger pump](#)

K Qian, Y N Sun, S Zheng, W S Du, J N Li, G Z Pei, Y Gao and N Wu.....165

[Thermal stress analysis of a damaged waste heat boiler](#)

Y-H Wu, C-C Hsiao and C-H Chen.....174

[Simulations of interfacial creep generation for shrink-fitted bimetallic work roll](#)

H Sakai, N-A Noda, Y Sano, Y Takase and G W Zhang.....182

[Exact solutions for postbuckling of a graded porous beam](#)

L S Ma and Z Y Ou.....188

[Experimental study on performance of outdoor ground materials in aspect of surface temperature by constant field experiment in subtropical climate city](#)

T Y Xi, J H Ding, X W Lv and Y S Lei.....195

[A novel finite element analysis of three-dimensional circular crack](#)

X C Ping, C G Wang and L P Cheng.....201

[Application of improved wavelet total variation denoising for rolling bearing incipient fault diagnosis](#)

W Zhang and M P Jia.....211

[The study of micro-inextensible piezoelectric cantilever plate](#)

L H Chen, J W Xu and W Zhang.....220

[Elasto-limited plastic analysis of structures for probabilistic conditions](#)

M Movahedi Rad.....229

[The application of decommissioned GEO satellites to CAPS](#)

S Y Fu, Z R Wang, H L Shi and L H Ma.....235

[Anti-buckling design of variable stiffness composite cylinder under combined loading based on the multi-objective optimization method](#)

Y Zheng and J Chen.....244

[A three degree of freedom manipulator used for store separation wind tunnel test](#)

R Wei, B-H Che, C-B Sun, J Zhang and Y-Q Lu.....251

[Study on magnetic force of electromagnetic levitation circular knitting machine](#)

X G Wu, C Zhang, X S Xu, J G Zhang, N Yan and G Z Zhang.....264

[Eddy current evaluation of metallic coating thicknesses over nonmagnetic metals](#)

B A Abu-Nabah.....270

[The investigation of strength and plasticity mechanism of low-temperature annealed ultrafine grained stainless steel](#)

Q H Pang, W J Li, M Y Cai, H Qi, C C Zhang and J N Wu.....276

[Shear properties of pultruded fiber reinforced polymer composite materials](#)

J H Seo, S H Kim, D M Ok, D J An and S J Yoon.....285

[Failure modes of single and multi-bolted joint in the pultruded fiber reinforced polymer composite members](#)

S Y Kim, J H Yoo, H K Kim, K Y Shin and S J Yoon.....291

[Tensile and compressive modulus of elasticity of pultruded fiber-reinforced polymer composite materials](#)

J H Lee, S H Kim, J K Park, W C Choi and S J Yoon.....298

[An experimental study on the shear strength of FRP perfobond shear connector](#)

S C Gwon, S H Kim, S J Yoon and C W Choi.....305

[Feasibility study of a brine boiling machine by solar energy](#)

W Phayom.....312

[Multi-objective optimization of process parameters of multi-step shaft formed with cross wedge rolling based on orthogonal test](#)

S T Han, X D Shu, V Shchukin and G Kozhevnikova.....317

[The three-dimensional simulation analysis of dynamic response on perforated strings](#)

M F Li, H F Liu, Y H Dou, L H Cao and Y X Liu.....324

[Cracking mechanism of shale cracks during fracturing](#)

X J Zhao, Q Zhan, H Fan, H B Zhao and F J An.....331

[Lightweight design of automobile frame based on magnesium alloy](#)

R Lyu, X Jiang, O Minoru and D Y Ju.....338

[Lightweight design and analysis of automobile wheel based on bending and radial loads](#)

X Jiang, R Lyu, Y Fukushima, M Otake and D Y Ju.....343

[Homogeneous and heterogeneous micro-structuring of austenitic stainless steels by the low temperature plasma nitriding](#)

T Aizawa and S-I Yoshihara.....350