

The Tenth International Conference on Multiaxial Fatigue & Fracture (ICMFF10)

Conference Program

Sunday 2 June, 2013

16:00 - 18:30 Registration

18:00 - 19:30 Welcome Reception at Room B (Multipurpose Room 1)

Monday 3 June, 2013

Room A (Hall)

9:00 - 9:20 Opening Ceremony at Room A (Hall)

9:30 - 10:50 Technical Session 11A – Notch 1

Chair: *A. Fatemi* (University of Toledo, USA)

11A-1 Effect of combined static loadings on torsional fatigue of carbon steel specimens with circumferential notches

D. Yamashita, I. Ohkawa (Hosei University, Japan)

11A-2 Effect of the double cold working of rivet hole on the residual stresses distribution and on fatigue life enhancement

M. Elajrami, R. Miloud, F. B. Boukhoulda (University of Sidi Bel Abbes, Algeria)

11A-3 High cycle fatigue strength of severely notched cast iron specimens under tension and torsion loading conditions

F. Berto, P. Lazzarin, R. Tovo (University of Padova, Italy)

11A-4 Numerical estimation of T-stress by the volumetric method for inclined notches under compression

M. H. Meliani, Z. Azari, Y. Matvienko, G. Pluvinage (Laboratoire de Physique Théorique et Physique des Matériaux, Algeria)

10:50 - 11:10 Break

11:10 - 12:30 Technical Session 11A – Notch 2

Chair: *I. Ohkawa* (Hosei University, Japan)

11A-5 On the shrink-fit induced multiaxial stress state in adjacent notched shaft geometries

E. Leidich, S. Hofmann, B. Brůžek (Chemnitz University of Technology, Germany)

11A-6 Micromechanical investigation of the influence of defects on the high cycle fatigue strength

R. Guerchais, F. Morel, C. Robert, N. Saintier (Arts et Métiers ParisTech, France)

11A-7 Notched fatigue behavior under multiaxial states of stress

A. Fatemi, N. Gates (University of Toledo, USA)

11A-8 A new multi-axial creep-damage model and its application in creep crack growth predictions

J.-F. Wen, S.-T. Tu (East China University of Science and Technology, China)

12:30 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture 1 at Room A (Hall)

Chair: *S.-T. Tu* (East China University of Science and Technology, China)

On the use of the Modified Wöhler Curve Method to perform the fatigue assessment of

welded joints subjected to constant and variable amplitude multiaxial fatigue loading

L. Susmel (University of Sheffield, UK)

14:40 - 16:00 Technical Session 12A – Welding 1

Chair: *S. Calloch* (Laboratoire Brestois de Mécanique et des Systèmes (LBMS), France)

- 12A-1 Prediction of fatigue failure in friction stir welded aluminium panels**
M. M. Shahri, R. Sandströma, J. Pilhagen (Delft University of Technology, Holland)
- 12A-2 Master fatigue reliability of welded sporting goods using the Dang Van multiaxial criterion**
A. Callens, A. Penot (Decathlon, Engineering center, France)
- 12A-3 Relaxation of welding residual stresses in tubular joints under multiaxial loading**
M. Farajian, T. Nitschke-Pagel, M. Boin, R. C. Wimpory (TU Braunschweig, Germany)
- 12A-4 Experimental investigations on the fatigue strength of welded joints on full-scale crane runway girders**
P. Rettenmeier, M. Euler, E. Roos, U. Kuhlmann (University of Stuttgart, Germany)

16:00 - 16:20 Break

16:20 - 17:20 Technical Session 12A – Welding 2

Chair: *M. Freitas* (Instituto Superior Técnico, Portugal)

- 12A-5 A rapid estimation method of the fatigue cyclic behavior in a confined plasticity zone: application to a double-notched specimen**
S. Plessis, C. Doudard, D. Thevenet, S. Calloch, M. Cazuguel (Ensta-Bretagne, France)
- 12A-6 Fatigue Analysis of Magnesium Spot-Welds**
S. B. Behravesh, H. Jahed, S. Lambert (University of Waterloo, Canada)
- 12A-7 Comparative study between butt and overlap welded of dissimilar steels (Structural - Stainless) under monotonic and cycled load**
A. L. G. Fuentes, A. V. del Rosario, J. A. Sira (IUT RC “Dr. Federico Rivero Palacio”, Venezuela)

Room B (Multipurpose Room 1)

9:00 - 9:20 Opening Ceremony at Room A (Hall)

9:30 - 10:50 Technical Session 11B – Deformation 1

Chair: *H. Jahed* (University of Waterloo, Canada)

- 11B-1 Multiaxial ratcheting-fatigue behaviors of Sn-3Ag-0.5Cu solder**
T. Liang, Y. Liang, G. Chen, X. Chen (Tianjin University, China)
- 11B-2 Fatigue damage in cast aluminium alloy under multiaxial loading conditions**
I. Koutiri, D. Bellett, F. Morel, L. Augustins (Arts et Métiers ParisTech, France)
- 11B-3 A probabilistic multiaxial two-scale model for cast materials in high cycle fatigue regime: application to marine propellers**
S. Calloch, C. Doudard, A. Ezanno, J.-L. Heuzé (Ensta-Bretagne, France)
- 11B-4 A Cyclic plasticity model for multiaxial behavior of magnesium**
M. Noban, H. Jahed (University of Waterloo, Canada)

10:50 - 11:10 Break

11:10 - 12:10 Technical Session 11B – Deformation 2

Chair: *X. Chen* (Tianjin University, China)

- 11B-6 The anomalous ratcheting effect of advanced chromium steels under multi-axial cyclic**

loading

A. Kutschke, K. Naumenko, H. Altenbach (Otto-von-Guericke-University Magdeburg, Germany)

11B-7 Mechanosorptive behaviour of wood: A pseudo-elastic formulation

O. Saifouni, R. M. Pitti, J. F. Destrebecq (Clermont Université, France)

11B-8 Micromechanical mechanics for inelastic deformations and damage in sintered powder metals

S. Ma, H. Yuan (University of Wuppertal, Germany)

12:10 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture 1 at Room A (Hall)

Chair: *S.-T. Tu* (East China University of Science and Technology, China)

On the use of the Modified Wöhler Curve Method to perform the fatigue assessment of welded joints subjected to constant and variable amplitude multiaxial fatigue loading

L. Susmel (University of Sheffield, UK)

14:40 – 15:20 Technical Session 12B - Deformation stress-strain

Chair: *L. Susmel* (The University of Sheffield, UK)

12B-1 Influence of static loading on load- and deformation-controlled torsional fatigue in steels

K. Tomita, I. Ohkawa (Hosei University, Japan)

12B-2 A multiaxial model for fatigue life estimation based on a combined deviatoric strain amplitude

E. N. Mamiya, F. C. Castro, L. Malcher, J. A. Araújo (University of Brasilia, Brazil)

15:20 - 15:40 Break

15:40 - 17:00 Technical Session 13B - Random loading

Chair: *E. N. Mamiya* (University of Brasilia, Brazil)

13B-1 Incremental approach for the fatigue design under complex loading of metallic materials

D. Halm, Y. Nadot, Q. H. Vu (Université de Poitiers, France)

13B-2 A cycle counting method for multiaxial random loading

L. Wang, T. Sui, Y. Sun, D. Wang (Northeastern University, China)

13B-3 A new formulation of the C-S multiaxial fatigue criterion in the frequency domain

A. Carpinteri, C. Bagni, A. Spagnoli, S. Vantadori (University of Parma, Italy)

13B-4 Effects of biaxial mean stress on critical plane orientations under biaxial fatigue loading conditions

B. Lei, V.-X. Tran, S. Taheri, L. Wan, Y. Zhou (Tsinghua University, China)

Tuesday 4 June, 2013

Room A (Hall)

9:00 - 10:20 Technical Session 21A - Nonproportional loading 1

Chair: *X. Yu* (Defence Science and Technology Organisation, Australia)

21A-1 Fatigue life, fractographic and thermographic analysis of steel X2CrNiMo17-12-2 for proportional and non-proportional loads

D. Skibicki, J. Sempruch, A. Lipski, Ł. Pejkowski (University of Technology and Life Sciences, Poland)

21A-2 Modification of Zenner and Liu criterion due to non-proportionality of fatigue load by means of MCE approach

D. Skibicki, Ł. Pejkowski (University of Technology and Life Sciences, Poland)

21A-3 Application of stress-based multiaxial fatigue criteria for proportional and non-proportional variable amplitude loadings for laserbeam-welded thin aluminium joints
A. Bolchoun, J. Wiebesiek, H. Kaufmann, C.M. Sonsino (Fraunhofer Institute for Structural Durability and System Reliability LBF, Germany)

21A-4 Out of phase multiaxial fatigue strength of cast iron
M.E. Cristea, S. Foletti, C. Cagdas (TENARIS Dalmine, R&D, Italy)

10:20 - 10:40 **Break**

10:40 - 12:00 **Technical Session 21A - Nonproportional loading 2**
Chair: *D. Skibicki* (University of Technology and Life Sciences, Poland)

21A-5 On the fatigue crack growth analysis of spliced plates under sequential tensile and shear loads
X. Yu (Defence Science and Technology Organisation, Australia)

21A-6 Non-proportional behaviour of a nickel-based superalloy & characterisation of the additional hardening response by a modified cyclic hardening curve
M. R. Bees, S. J. Pattison, N. Fox, M. T. Whittaker (Swansea University, UK)

21A-7 Analysis of the mesoscopic high cycle multiaxial fatigue strength of fcc metals with crystal plasticity and generalized extreme values probability
A. Hor, N. Saintier, C. Robert, T. Palin-Luc, F. Morel (Arts et Métiers ParisTech, France)

21A-8 Estimation of the fatigue life of the alloy steel 35NCD16 under random loading
M. Kurek, T. Łagoda, F. Morel (Opole University of Technology, Poland)

12:00 - 14:00 **Lunch**

14:00 - 14:30 **Plenary Lecture 2 at Room A (Hall)**
Chair: *M. Sakane* (Ritsumeikan University, Japan)

Multiaxial fatigue and fracture in anisotropic materials: The case of prestressing steel
J. Toribio (University of Salamanca, Spain)

14:40 - 16:00 **Technical Session 21A - Nonproportional loading 3**
Chair: *T. Łagoda* (Opole University of Technology, Poland)

21A-9 Multiaxial fatigue behavior (LCF and HCF) of AZ31B-F magnesium alloy
V. Anes, L. Reis, B. Li, M. Freitas (Instituto Superior Técnico, Portugal)

21A-10 The critical aspect of cycle's definition in multiaxial fatigue conditions
V. Anes, L. Reis, B. Li, M. Freitas (Instituto Superior Técnico, Portugal)

21A-11 Low cycle fatigue of an austenitic TRIP steel under various biaxial-planar stress states
S. Ackermann, D. Kulawinski, S. Henkel, H. Biermann (Technische Universität Bergakademie Freiberg, Germany)

21A-12 LCF behavior and microstructure of alpha-brass CuZn30 under uniaxial, planar-biaxial and tension-torsion loading conditions
S. Henkel, A. Weidner, H. Biermann, H.-J. Kühn, B. Rehmer, N. Sonntag (Technische Universität Bergakademie Freiberg, Germany)

16:00 - 16:20 **Break**

16:20 - 17:40 **Technical Session 21A - Nonproportional loading 4**
Chair: *M. Endo* (Fukuoka University, Japan)

21A-13 Estimation of fatigue crack orientation using critical plane parameters: An experimental

investigation

J. Albinmousa, H. Jahed, S. Lambert (King Fahd University of Petroleum & Minerals, Saudi Arabia)

21A-14 Integration of damage differentials (IDD) verification based on studies of 11523.1 steel tubular specimens subjected to non-proportional axial loading and torsion

S. Stefano, J. Papuga, M. Ruzicka (LTU University, Bulgaria)

21A-15 High cycle multiaxial fatigue strength of cast iron: experimental investigation under uniaxial and biaxial loading

R. Tovo, P. Lazzarin, F. Berto, M. Cova (University of Ferrara, Italy)

21A-16 Deviatoric formulation of the SWT parameter

D. Kujawski (Western Michigan University, USA)

18:00 - 18:30 ICMFF Committee Meeting at Room B (Multipurpose Room 1)

Room B (Multipurpose Room 1)

9:00 - 10:20 Technical Session 21B - High cycle fatigue 1

Chair: *Kenji Nishio* (Kawasaki Heavy Industries, Ltd., Japan)

21B-1 Very-high-cycle-fatigue regime of in-service titanium blades subjected to multiaxial loading during aircraft accessory power plant operations

A.A. Shanyavskiy, A.D. Nikitin, G.G. Belousov (State Center for Flights Safety, Russia)

21B-2 An online monitoring system for fatigue damage assessment under multiaxial random loading

H. Chen, D.-G. Shang, G.-W. Xu (Beijing University of Technology, China)

21B-3 A new stress-based multiaxial high-cycle fatigue life prediction model Xin

Xin Li (Beijing Institute of Technology, China)

21B-4 A multi-input fatigue equivalence method applied on railway wheels from in-service load

C. Roux, X. Lorang, B. Delattre, H.M. Maitournam, M.L. Nguyen-Tajan (SNCF, France)

10:20 - 10:40 Break

10:40 - 12:00 Technical Session 21B - High cycle fatigue 2

Chair: *V.N. Shlyannikov* (Russian Academy of Sciences, Russia)

21B-5 Localization rules for the extension of a HCF two-scale damage model to a Lemaitre LCF damage model

P. Gaborit, R. Desmorat, A. du Tertre, A. Pyre (LMT-Cachan, France)

21B-6 Multi-axial high-cycle fatigue failure behavior of 2A12-T4 aluminum alloy under torsion loading

S. Xinhong, Z. Jianyu, X. Qingshan, F. Binjun (Beihang University, China)

21B-7 Comparison of frequency-domain methods for a vibration-fatigue-life estimation

J. Slavič, M. Mršnik, M. Boltežar (University of Ljubljana, Slovenia)

21B-8 A stress-based method to predict multiaxial fatigue limits

G. Matsubara, K. Nishio (Kawasaki Heavy Industries, Ltd., Japan)

12:00 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture 2 at Room A (Hall)

Chair: *M. Sakane* (Ritsumeikan University, Japan)

Multiaxial fatigue and fracture in anisotropic materials: The case of prestressing steel

J. Toribio (University of Salamanca, Spain)

14:40 - 16:20 Technical Session 22B - High temperatures

Chair: *R. A. Cláudio* (Instituto Politécnico de Setúbal, Portugal)

- 22B-1 Calibrated modeling and simulation of cyclic thermal stress induced fatigue in AISI 316L stainless steel**
G. Facheris, K. G. F. Janssens (Paul Scherrer Institute, Switzerland)
- 22B-2 Creep damage assessment considering stress multiaxiality for notched specimens of a CrMoV steel**
N. Isobe, K. Yashirodai, K. Murata (Hitachi, Ltd., Japan)
- 22B-3 Thermomechanical creep fatigue lifetime comparison in three heat resistant steels**
P. Wang, L. Cui, A. Scholz, S. Linn, M. Oechsner (Technische Universität Darmstadt, Germany)
- 22B-4 Low cycle fatigue of Mod.9Cr-1Mo steel under multiaxial loading at high temperature**
D. Jin, W. Wang, M. Sakane (Shenyang University of Chemical Technology, China)
- 22B-5 Investigation of the high temperature fatigue behavior of the nickel-base superalloy Waspaloy™ under biaxial-planar loading**
D. Kulawinski, S. Henkel, H. Biermann, D. Holländer, M. Thiele, U. Gampe (TU Bergakademie Freiberg, Germany)

16:20 - 16:40 Break

16:40 - 18:00 Technical Session 23B - New experiments

Chair: *D. Jin* (Shenyang University of Chemical Technology, China)

- 23B-1 Combined experimental and theoretical analysis of the mixed mode bending test**
N. B. Salem, J. Jumel, M.K. Budzik, M.E.R. Shanahan (Université de Bordeaux, France)
- 23B-2 Thermal measurement used to characterize the fatigue properties of elastomeric materials at micro scales**
I. Masquelier, Y. Marco, V. Le Saux, C. Doudard, S. Calloch, P. Charrier (ENSTA Bretagne, France)
- 23B-3 Multiaxial fatigue behaviour of 1050 H14 aluminium alloy by a biaxial cruciform specimen testing method**
R. A. Cláudio, M. Freitas, L. Reis, B. Li, I. Guelho (Instituto Politécnico de Setúbal, Portugal)
- 23B-4 Optimization of cruciform specimen for low capacity biaxial testing machine**
I. Guelho, L. Reis, M. Freitas, B. Li, J. F. A. Madeira, R. A. Cláudio (Instituto Superior Técnico, Portugal)

18:00 - 18:30 ICMFF Committee Meeting at Room B (Multipurpose Room 1)

Wednesday 5 June, 2013

Room A (Hall)

9:00 - 10:40 Technical Session 31A - Crack nucleation and growth 1

Chair: *H. Matsunaga* (Kyushu University)

- 31A-1 Electric current density and temperature field around corner crack at a hole under Joule heating**
T. J.-C. Liu (Ming Chi University of Technology, Taiwan)
- 31A-2 Load path effect in mixed mode I+II+III fatigue crack growth**
F. Flavier, S. Pommier, E. Galenne, S. Courtin (LMT-Cachan, France)
- 31A-3 Fatigue crack propagation in short-fiber reinforced plastics**
K. Tanaka, T. Kitano, N. Egami (Meijo University, Japan)

31A-4 Analytical solution of the crack problem for the inhomogeneous materials taking into account the independent changes, as the elastic modulus and Poisson's ratio
I. Trubchik, S. Aizikovich, L. Krenev (Don State Technical University, Russia)

31A-5 A critical plane theory for multiaxial fatigue of elastomers
E. Verron, A. Andriyana, M. Aït-Bachir (LUNAM Université, France)

10:40 - 11:00 Break

11:00 - 13:00 Technical Session 31A - Crack nucleation and growth 2
Chair: *K. Tanaka* (Meijo University, Japan)

31A-6 A novel approach to predict the growth rate of short cracks under multiaxial loadings
F. Brugier, S. Pommier, R. de M. Pinho, C. Mary, D. Soria (LMT-Cachan, France)

31A-7 Crystallinity and multiaxiality around a crack tip in natural rubber investigated by synchrotron wide-angle x-ray diffraction during fatigue tests
P. Rublon, B. Huneau, E. Verron, N. Saintier, S. Beurrot, A. Leygue, C. Mocuta, D. Thiaudière, D. Berghezan (CNRS, France)

31A-8 Experimental multi-scale approach for crack propagation in mode I for quasi brittle materials
E. Morice, S. Pommier, A. Delaplace (LMT-Cachan, France)

31A-9 Mathematical modeling of the three equal collinear cracks interaction in a pre-stressed Kevlar composite
E.-M. Craciun, L. Marsavina, A. Rabaea, T. Sadowski (Ovidius University of Constanta, Romania)

31A-10 Cracks interaction in a pre-stressed elastic composite subjected by tangential forces
E.-M. Craciun, A. Rabaea, N. Peride, B. Radoiu (Ovidius University of Constanta, Romania)

31A-11 Mode I fatigue crack growth with occasional mode II loading in 7075 aluminum alloy
H. Matsunaga, M. Makizaki, D.F. Socie, K. Yanase, M. Endo (Kyushu University, Japan)

13:00 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture 3 at Room A (Hall)
Chair: *A. Carpinteri* (University of Parma, Italy)

Evaluation of multiaxial low cycle fatigue life under non-proportional loading
T. Itoh, M. Sakane (Ritsumeikan University, Japan)

14:40 - 15:40 Technical Session 31A - Crack nucleation and growth 3
Chair: *D. F. Socie* (University of Illinois at Urbana-Champaign, USA)

31A-12 Effects of small defects and cracks in multiaxial fatigue
K. Yanase, M. Endo (Fukuoka University, Japan)

31A-13 Evaluation of growth of subsurface crack by fatigue. -Simulation of penetration of internal flaw to surface of the structure-
M. Kikuchi, S. Yamada, R. Serizawa (Tokyo University of Science)

31A-14 A macro- and micro-approach to the anisotropic fatigue performance of progressively drawn pearlitic steel
J. Toribio, J.C. Matos, B. González (University of Salamanca, Spain)

15:40 - 16:00 Break

16:00 - 17:20 Technical Session 31A - Crack nucleation and growth 4
Chair: *M. Kikuchi* (Tokyo University of Science)

31A-15 Fatigue crack growth of arbitrary surface cracks in welded components

P. Lindroth, G. Glinka, G. Marquis (Aalto University, Finland)

31A-16 Benchmark problems in multiaxial fatigue

D.F. Socie, S.D. Downing, S. Utagawa (University of Illinois at Urbana-Champaign, USA)

31A-17 Crack growth rate under variable T-stress

V.N. Shlyannikov, A.P. Zakharov (Russian Academy of Sciences, Russia)

31A-18 Fatigue crack growth behavior of aluminum 7075-T6 tubes with a transverse hole under axial and torsion loadings

T. Zarrin-Ghalami, A. Fatemi, D. F. Socie (University of Toledo, USA)

19:00 - 22:00 Banquet at Kyoto Shinsen HEIHACHI

(<http://www.heihachi-web.com/english.html>)

Room B (Multipurpose Room 1)

9:00 - 10:20 Technical Session 31B - Contact fatigue 1

Chair: *N. Isobe* (Hitachi, Ltd., Japan)

31B-1 Contact fatigue crack initiation prediction of spur gears based on finite element dynamics analysis

W. J. Qin, C. Y. Guan (Beijing Institute of Technology, China)

31B-2 Transferability of rolling contact fatigue- and uniaxial fatigue test results based on von Mises stress distributions

I. Karin, K. Lipp H. Hanselka (Technische Universität Darmstadt, Germany)

31B-3 Fatigue analysis of railway wheels under combined thermal and mechanical loads

A. Haidari, P. H. Tehrani (Iran University of science and technology, Iran)

31B-4 Theoretical and experimental approach to rolling contact fatigue in high-speed railways

J. Kuszczak, L. Reis, B. Li, M. Freitas (Instituto Superior Técnico, Portugal)

10:20 - 10:40 Break

10:40 - 12:00 Technical Session 31B - Contact fatigue 2

Chair: *L. Reis* (Instituto Superior Técnico, Portugal)

31B-5 Application of the multiaxial fatigue criteria for fretting fatigue life: case of mono-contact steel/Al

A. Belloula, A. Amrouche, M. Nait-Abdelaziz, N. Benseddiq (Université Lille Nord de France, France)

31B-6 X-FEM 2D crack propagation under rolling contact fatigue taking into account realistic residual stresses

B. Trollé, M.-C. Baietto, A. Gravouil, S. H. Mai, B. Prabel, M.-L. Nguyen-Tajan (LaMCoS, France)

31B-7 Multiaxial fretting fatigue life methodology

M. S. T. Pires, E. R. F. S. Campos J. A. Araújo, F. C. Castro, E. N. Mamiya, A. A. Fadel (University of Brasilia, Brazil)

31B-8 Propagation of small cracks under RCF for a railway wheel steel and defect acceptance criteria

S. Beretta, S. Foletti, G. Gurer (Politecnico di Milano, Italy)

12:00 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture 3 at Room A (Hall)

Chair: *A. Carpinteri* (University of Parma, Italy)

Evaluation of multiaxial low cycle fatigue life under non-proportional loading

T. Itoh, M. Sakane (Ritsumeikan University, Japan)

14:40 - 16:00 Technical Session 32B – Applications 1

Chair: *S. Zhang* (Central Research Institute of Electric Power Industry, Japan)

32B-1 Fatigue design methodology for automotive welded structures under complex loading

F. Dal Cero Coelho, Q. H. Vu, D. Halm, Y. Nadot, J-L. Breat (Institut Pprime, France)

32B-2 Thermal mechanical fatigue of coke drum materials

J. Chen, Z. Xia (University of Alberta, Canada)

32B-3 Combined torsion and bending moments at collapse for pipes with circumferentially through-wall crack

K. Hasegawa, Y. Li, K. Osakabe (Japan Nuclear Energy Safety Organization, Japan)

32B-4 Effect of wall thinning shape on combined torsion and bending moments at plastic collapse for pipes

Y. Li, K. Hasegawa (Japan Nuclear Energy Safety Organization, Japan)

16:00 - 16:20 Break

16:20 - 17:00 Technical Session 32B – Applications 2

Chair: *K. Hasegawa* (Japan Nuclear Energy Safety Organization, Japan)

32B-5 Role of bond on crack width in reinforced concrete members in tension

P. Bernardi, R. Cerioni, D. Ferretti, E. Michelini (University of Parma, Italy)

32B-6 Wedge splitting test: Calculation of fatigue crack lengths in cementitious composites based on CMOD measurement

S. Seitl, V. Veselý, T. Holuřová, R. Hanzlovský (Academy of Science of the Czech Republic, Czech Republic)

19:00 - 22:00 Banquet at Kyoto Shinsen HEIHACHI

(<http://www.heihachi-web.com/english.html>)

Thursday 6 June, 2013

Room A (Hall)

9:00 - 10:20 Technical Session 41A - Simulation/New materials 1

Chair: *V. Le Saux* (ENSTA Bretagne)

41A-1 Multiaxial fatigue damage analysis by atomistic simulation

R. Ghelichi, M. Guagliano (Politecnico di Milano, Italy)

41A-2 Fatigue performance and microstructure of Pt-20Ir wire and its coil for medical device application

B. Li, H. Zhang, K. Cho (Medtronic Neuromodulation, USA)

41A-3 The consequence of delamination for the fracture toughness of a duplex stainless steel

J. Pilhagen, R. Sandström, M. M. Shahri (Royal Institute of Technology, Sweden)

41A-4 Experimental and numerical study of the fatigue of GFRP composites under complex loadings

H. Sawadogo, S. Panier, S. Hariri (Mines Douai, France)

10:20 - 10:40 Break

10:40 - 12:00 Technical Session 41A - Simulation/New materials 2

Chair: *S. Panier* (Mines Douai, France)

- 41A-5 Fatigue in dental implants**
J. M. Ayllón, C. Navarro, J. Vázquez, J. Domínguez (Escuela Superior de Ingenieros de Sevilla, España)
- 41A-6 Infrared thermography: a powerful tool to characterize the thermomechanical and fatigue properties of short glass fiber reinforced thermoplastics structural samples**
V. Le Saux, Y. Marco, A. Launay, L. Jégou, S. Calloch (ENSTA Bretagne, France)
- 41A-7 Heat built-up measurements on SFRP: fast determination of fatigue properties and validation of a fatigue criterion on automotive parts**
Y. Marco, L. Jégou, V. Le Saux, C. Doudard, S. Calloch, P. Charrier (ENSTA Bretagne, France)
- 41A-8 Shape memory alloys fatigue and self-heating of NiTi**
V. Legrand, S. A. Chirani, S. Calloch (ENSTA Bretagne, France)

12:30 - 13:00 Closing Address at Room A (Hall)

13:00 - 14:30 Lunch

Room B

9:00 - 10:20 Technical Session 41B - Life prediction 1

Chair: *J Toribio* (University of Salamanca, Spain)

- 41B-1 Multiaxial fatigue design of cast parts : defect stress gradient (DSG) approach**
Y. Nadot, P. Mu, C. Nadot-Martin, A. Steinwandel (Institut Pprime, France)
- 41B-2 Lifetime of semi-ductile materials on the critical plane**
K. Walat, T. Łagoda (Opole University of Technology, Poland)
- 41B-3 Comparative study of multiaxial fatigue criteria under different loading conditions**
M. Freitas, L. Reis, C.M. Sonsino, B. Li, V. Anes (Instituto Superior Técnico, Portugal)
- 41B-4 Multiaxial fatigue behaviour of selected aluminium alloys under bending with torsion loading condition**
A. Niesłony, T. Łagoda, K. Walat, M. Kurek (Opole University of Technology, Poland)

10:20 - 10:40 Break

10:40 - 11:40 Technical Session 41B - Life prediction 2

Chair: *Y. Nadot* (Département de Mécanique et de Physique des Matériaux, Institut Pprime, France)

- 41B-5 Residual fatigue life estimation under mixed mode loading**
S. Boljanović, S. Maksimović (VTI – Aeronautical Institute, Serbia)
- 41B-6 Locally multiaxial fracture behaviour of high-strength cold-drawn prestressing steel wires**
J. Toribio, B. González, J.C. Matos (University of Salamanca, Spain)
- 41B-7 Multiaxial life estimations based on tensile properties**
N. Shamsaei, S. A. McKelvey (Chrysler Group LLC, USA)

12:30 - 13:00 Closing Address at Room A (Hall)

13:00 - 14:30 Lunch