

LCF 6

**Sixth International
Conference on
Low Cycle Fatigue**



Berlin, Germany

September 8 – 12, 2008



DEUTSCHER VERBAND FÜR MATERIALFORSCHUNG UND -PRÜFUNG e.V.

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- Prof. Dr. T. BECK**, Research Centre Jülich GmbH, Jülich, D
- Prof. M. OKAZAKI**, Dept. of Mechanical Engineering, Nagaoka University of Technology, Nagaoka, J

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LCF6 is supported by



The 6th International Conference on Low Cycle Fatigue is held from 8th to 12th September 2008 in Berlin, Germany, following the successful conferences in Stuttgart (1979), Munich (1987), Berlin (1992), Garmisch-Partenkirchen (1998) and Berlin (2003). The main objectives of this conference series are:

- to bring together experts in several fields with the common interest in low cycle fatigue, facilitating and encouraging mutual exchange of knowledge and experience;
- to provide a forum for the presentation and discussion of recent advances;
- to help identifying research and development needs in the future.

The conference is devoted to both basic research and engineering applications of low cycle fatigue. A special emphasis lies in the design, manufacturing and operation of equipment and structures.

In response to our call for papers, 175 abstracts from 27 countries were submitted to the Organizing Committee. From these papers about 130 are presented in the conference as invited lectures or short contributions – either as oral or poster presentation. All the papers are presented in poster form in extended poster sessions, a peculiarity of the LCF Conferences which allows an intense, thorough discussion of all contributions.

The thematic sessions are arranged according to the following topics:

- Isothermal low cycle fatigue; general aspects
- Multiaxial loading
- Interaction between creep, high cycle and low cycle fatigue
- Thermal and thermo-mechanical fatigue; fretting fatigue
- Damage, crack initiation and growth
- Microstructural aspects
- Influence of environmental conditions
- Influence of processing and surface modification technologies
- Experimental aspects; standardization; quality assurance
- Materials related topics
- Design methods; life prediction
- Case studies

On behalf of the Organizing Committee we wish to thank all the authors, session chairmen, members of the committees and numerous others who gave an important contribution to this conference. As the former conferences in this series, this was organized by the German Association for Materials Research and Testing (Deutscher Verband für Materialforschung und –prüfung, DVM). Our special thanks to Mrs. Kathrin Leers and her team, whose administrative and organizational capability supported once more our work from the beginning.

Pedro Dolabella Portella, Berlin, Germany
Tilman Beck, Jülich, Germany
Masakazu Okazaki, Nagaoka, Japan

19:00 **Get Together**

Location: Kuchel-Eck, Ludwigkirchplatz 1,
10719 Berlin-Wilmersdorf
www.kuchel-eck.de

HALL I – Plenary Session A

Isothermal Low Cycle Fatigue

Chair: *M. OKAZAKI*, Nagaoka University of Technology, Nagaoka, J

10:00 **Opening**

10:10 **P1 Plenary lecture:**

Characterisation of the fatigue behaviour of metals on the basis of mechanical hysteresis, temperature and resistance data

D. EIFLER

Institute of Materials Science and Engineering, University of Kaiserslautern, D

10:40 **L100**

Use of the fractal nature of spatial and temporal response behavior for materials damage characterization

J. SCHREIBER, U. CIKALOVA, Y. VERTYAGINA

Fraunhofer Institute for Non-Destructive Testing, Branch Dresden, D

11:00 **L4**

Damage accumulation processes in steel under low-cycle loading

A.A. LEBEDEV, N.R. MUZYKA, V.P. SHVETS

G.S. Pisarenko Institute for Problems of Strength of the National Ac. Sci. Of Ukraine, Kyiv, UA

11:20 **L3**

Effect of depressed temperature on the internal and effective cyclic stresses in austenitic stainless 316L steel

J. POLÁK, J. MAN, M. PETRENEC, T. KRUML, K. OBRTLÍK

Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ

11:40 **L115**

Low cycle fatigue behaviour of alternative steels for highly stressed rail components

J. AHLSTRÖM, B. KARLSSON

Department of Materials and Manufacturing Technology, Chalmers University of Technology, Göteborg, S

12:00 – 13:30 **Break**

HALL I - Parallel Session B1**Multiaxial loading**

Chair: D. SOCIE, University of Illinois at Urbana-Champaign, Mechanical and Industrial Engineering, Urbana, USA

13:30 **L5**
Material dependence of multiaxial low cycle fatigue life under non-proportional loading

T. YANG¹, T. ITOH²

¹ Graduated Student, Graduate School of Engineering, University of Fukui

² Department of Mechanical Engineering, Graduate School of Engineering University of Fukui, J

13:50 **L6**
Additional hardening on aluminium alloy and structural steels under biaxial low-cycle fatigue

L. REIS, F. MIRANDA, B. LI, M. DE FREITAS

Instituto Superior Técnico, Department of Mechanical Engineering, Lisboa, P

14:10 **L7**
Low cycle fatigue under stress controlled non-proportional loading for 1070 aluminum and 304 stainless steel

T. YAMAMOTO¹, T. ITOH², M. SAKANE³, N. HAMADA⁴

¹ Oita University, Oita, J

² University of Fukui, J

³ Ritsumeikan University, Shiga, J

⁴ Hiroshima Kokusai Gakuin University, Hiroshima, J

14:30 **L8**
Multiaxial low cycle fatigue life of notch specimens for SUS316 stainless and SGV410 steels under non-proportional loading

T. ITOH¹, T. OZAKI²

¹ Department of Mechanical Engineering, Graduate School of Engineering, University of Fukui, J

² Graduate School of Engineering, University of Fukui, J

14:50 **L9**
Effect of out-of-phase angle and strain waveform on low-cycle fatigue life of SUS304 steel subjected to combined straining of push-pull and cyclic torsion at elevated temperatures

K. TOKIMASA¹, Y. MIYAHARA²

¹ School of Biology-Oriented Science and Technology, Kinki University, Kinokawa, Wakayama, J

² Graduate School of Biology-Oriented Science and Technology, Kinki University, Kinokawa, Wakayama, J

15:10-15:40 **Break**

HALL IV/V - Parallel Session B2**Microstructural aspects**

Chair: D. EIFLER, University of Kaiserslautern, Institute of Materials Science and Engineering, Kaiserslautern, D

13:30 **L10**
Crack initiation and fatigue of a high strength austenitic stainless steel under cyclic load

S. RIEDNER, H. BERNS

Chair of Materials Technology, Ruhr-University Bochum, D

13:50 **L11**
Microstructural evolutions of 9-12%Cr martensitic steels in creep-fatigue at high temperature

B. FOURNIER, M. SAUZAY, E. RAUCH, A. RENAULT, L. DUPUY,

A. PINEAU, CEA Saclay, Gif sur Yvette, F

14:10 **L12**
LCF mechanisms of the 25Cr-7Ni-0.25N duplex stainless steel investigated by atomic force microscopy

D. SALAZAR, I. SERRE, J.-B. VOGT

Université des Sciences et Technologies de Lille, Laboratoire de Métallurgie Physique et Génie des Matériaux, Villeneuve d'Ascq F

14:30 **L13**
Microstructural changes in duplex stainless steels during low cycle fatigue

S. HEREÑÚ¹, I. ALVAREZ-ARMAS¹, A. F. ARMAS¹, S. DEGALLAIX², A. CONDÓ³, F. LOVEY³

¹ Instituto de Física Rosario (IFIR), Rosario, RA

² Laboratoire de Mécanique, Ecole Centrale de Lille, Villeneuve d'Ascq, F

³ Centro Atómico Bariloche, RA

14:50 **L14**
LCF behaviour of fine grained austenitic stainless steels

J.-B. VOGT¹, A. POULON^{1,3}, S. BROCHET¹, J.-C. GLEZ²,

J.-D. MITHIEUX²

¹ Université des Sciences et Technologies de Lille, Laboratoire de Métallurgie Physique et Génie des Matériaux, Villeneuve d'Ascq, F

² UGINE&ALZ Research Center, Isbergues, F

³ present address: Laboratoire de Chimie de la Matière Condensée de

Bordeaux, Pessac, F

15:10 – 15:40 **Break/Posters**

HALL I - Parallel Session C1**Multiaxial loading**

Chair: T. ITOH, Department of Mechanical Engineering, Graduate School of Engineering
University of Fukui, J

- 15:40 **L15**
Load path effect under multiaxial load conditions
J. PAPUGA, Z. HRUBY, M. RŮŽIČKA, K. DOUBRAVA
Czech Technical University in Prague, Fac. of Mech. Engineering,
Dept. of Mechanics, Biomechanics and Mechatronics, Prague, CZ
- 16:00 **L16**
Effect of biaxial stress states on the fatigue behaviour of pressurized components
E. ROOS, K.-H. HERTER, B. REICHERTER
Universität Stuttgart (MPA) Institut für Materialprüfung, Werkstoffkunde und Festigkeitslehre (IMWF), Stuttgart, D
- 16:20 **L17**
An improved multiaxial stress-strain correction model for elastic FE postprocessing
H. LANG, K. DRESSLER
Fraunhofer Institut für Techno- und Wirtschaftsmathematik, Kaiserslautern, D
- 16:40 **L18**
On the use of the Modified Manson-Coffin Curve Method to estimate low-cycle fatigue lifetime of notched components subjected to multiaxial cyclic loading
L. SUSMEL¹, G. MENEGHETTI², B. ATZORI²
¹ Department of Engineering, University of Ferrara, I
² Department of Mechanical Engineering, University of Padova, I
- 18:00 – 20:00 **Welcome Reception**
Golden Tulip Berlin – Hotel Hamburg
Landgrafenstr. 4, 10787 Berlin-Tiergarten
www.goldentulipberlin.de

HALL IV/V - Parallel Session C2**Microstructural aspects**

Chair: N.N.

- 15:40 **L19**
Low-cycle-fatigue damage induced by grain boundaries and twin boundaries in pure Cu and Cu-Al alloys
Z. F. ZHANG, S. QU, Z. G. WANG
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, RC
- 16:00 **L20**
Linking microstructure and fatigue of forged Ti-6Al-4V aerospace parts
M. RIEDLER¹, M. STOCKINGER¹, M. STOSCHKA², B. OBERWINKLER², W. TAN³
¹ Böhler Schmiedetechnik GMBH & Co KG, A
² Chair of Mechanical Engineering, University of Leoben, A
³ CD-Laboratory for Fatigue Analysis, University of Leoben, A
- 16:20 **L21**
Persistent slip bands – slip activity and dislocation structure in dependence on number of cycles of cyclically deformed Ni-polycrystals
A. WEIDNER, W. TIRSCHLER, C. BLOCHWITZ, W. SKROTZKI
Technische Universität Dresden, Institut für Strukturphysik, Dresden, D
- 16:40 **L22**
Effect of global and local parameters of microstructure on the LCF behaviour of two phase materials: example of binary Al-Si alloys
J. STOLARZ
Ecole Nationale Supérieure des Mines, Saint-Etienne, F
- 18:00 – 20:00 **Welcome Reception**
Golden Tulip Berlin – Hotel Hamburg
Landgrafenstr. 4, 10787 Berlin-Tiergarten
www.goldentulipberlin.de

HALL I - Plenary Session D

Thermal fatigue / Thermomechanical fatigue

Chair: H.-J. CHRIST, Universität Siegen, Institut für Werkstofftechnik, D

09:00 **P2**

Award of the DVM Honorary Membership

Plenary lecture

L. RÉMY

Centre des Matériaux Pierre Marie Fournier, Evry, F

09:30 **L23**

Damage mechanisms under thermomechanical fatigue loading of the ODS superalloy PM 1000

W. O. NGALA, H. J. MAIER

Lehrstuhl für Werkstoffkunde, Universität Paderborn, D

09:50 **L24**

The influence of thermo-mechanical fatigue on nickel coatings (gal. Ni, Ni 200/201)

H. KOEBERL¹, G. WINTER¹, H. LEITNER², W. EICHLSEDER^{1,2}

¹ CD-Laboratory for Fatigue Analysis, University of Leoben, A

² Chair of Mechanical Engineering, University of Leoben, A

10:10 **L25**

Damage based life prediction model for EBPVD thermal barrier coatings under thermal fatigue

C. COURCIER^{1,2}, V. MAUREL¹, L. REMY¹, A. PHELIPPEAU²

¹ Centre des Matériaux Pierre Marie Fournier, Evry Cedex, F

² Snecma, groupe SAFRAN, site de Villaroche, Moissy Cramayel, F

10:30 **L26**

Crack initiation under biaxial thermomechanical fatigue on austenitic stainless steels

A. FISSOLO¹, O. ANCELET¹, C. GOURDIN¹, L. VINCENT¹,

J. M. STELMASZYK², A. CONSTANTINESCU³, S. AMIABLE³

¹ CEA – Saclay, Gif sur Yvette, F

² Institut de Radioprotection et de Sécurité Nucléaire, Fontenay-aux-Roses, F

³ École Polytechnique, Laboratoire de Mécanique des Solides, Palaiseau, F

10:50 – 11:20 **Break/Posters**

HALL I - Parallel Session E1

Thermal fatigue / Thermomechanical fatigue

Chair: L. REMY, Centre des Matériaux Pierre Marie Fourt, Evry, F

11:20 **L27**
The TMF stress-strain characteristics of creep-resistant steels
J. OKRAJNI, A. MAREK, G. JUNAK
 Silesian University of Technology, Department of Mechanics of Materials,
 Katowice, PL

11:40 **L28**
TMF investigations on specimens of SIMO alloyed cast iron are compared to a breakdown of an exhaust manifold
G. WINTER¹, H. KOEBERL¹, W. TAN¹, W. EICHLSEDER^{1,2}
¹ CD-Laboratory for Fatigue Analysis, Leoben, A
² Chair of Mechanical Engineering, Montanuniversität Leoben, Leoben, A

12:00 **L29**
Crack growth in a parallelepipedic specimen subjected to a cyclic temperature gradient
H.N. LE, C. GARDIN, G. BENOIT, D. BERTHEAU
 LMPM –Futuroscope, Chasseneuil, F

12:20 **L30**
Insight for mitigating thermal fatigue
A. E. CARDEN
 Professor Emeritus, University of Alabama, Department of Engineering
 Mechanics, Cottondale, AL, USA

12:40 **L31**
Thermal loading criticality and thermal-mechanical fatigue of railway brake discs
P. DUFRÉNOY¹, G. DEGALLAIX¹, P. WICKER^{1,2}, J. WONG¹, W. D'HARDIVILLIERS²
¹ Laboratoire de Mécanique de Lille, Villeneuve d'Ascq Cedex, F
² SNCF, Agence d'Essai Ferroviaire, Vitry sur Seine, F

13:00 – 14:30 **Break/Posters**

HALL IV/V - Parallel Session E2

Lightweight materials: Al based alloys, MMC

Chair: H. OGAWA, Ube National College of Technology, Ube, Yamaguchi, J

11:20 **L32**
Isothermal low cycle fatigue behaviour of AA2618 aluminium alloy at various strain ratios
O. KHALIL, K.-H. LANG, D. LÖHE
 Universität Karlsruhe (TH), Institut für Werkstoffkunde I, Karlsruhe, D

11:40 **L33**
Cyclic material behaviour of aluminium wrought alloys
R. WAGENER, A. ESDERTS
 TU Clausthal, Institut für Maschinelle Anlagentechnik und Betriebsfestigkeit, Clausthal-Zellerfeld, D

12:00 **L34**
Residual stresses and damage of Al₂O₃ particle reinforced Al-6061 under thermal fatigue loading
A.M. KLASKA¹, T. BECK², A. WANNER³, D. LÖHE³
¹ ABB AG / PTPM-EK, Ratingen, D
² Forschungszentrum Jülich, D
³ Universität Karlsruhe (TH), Institut für Werkstoffkunde I, Karlsruhe, D

12:20 **L35**
Fatigue of AL₂O₃-ALSI12 and TIO₂-ALSI12 preform-MMCS at room and elevated temperatures
O. ULRICH, K.-H. LANG, D. LÖHE
 Universität Karlsruhe (TH), Institut für Werkstoffkunde I, Karlsruhe, D

12:40 **L36**
Fatigue response of AL/APC-2 hybrid cross-ply nano-composite laminates at elevated temperature
M.-H. R. JEN, Y.-C. SUNG, Y.-D. LAI
 Dept. Of Mechanical and Electro-Mechanical Engr. National Sun Yat-Sen University, Taiwan, RC

13:00-14:30 **Break/Posters**

HALL I - Parallel Session F1

Experimental issues

Chair: M. DE FREITAS, Instituto Superior Técnico, Department of Mechanical Engineering, Lisboa, P

14:30 **L37**
Thermal and kinematic full-field analysis at the micro-structure scale of an AISI 316L austenitic stainless steel under cyclic loading
L. BODELOT, L. SABATIER, E. CHARKALUK, P. DUFRÉNOY
 Laboratoire de Mécanique de Lille – UMR CNRS, Villeneuve d'Ascq, F

14:50 **L38**
High-temperature low cycle fatigue and thermomechanical fatigue.
Practical procedures to validate the start-up of new testing system in Ansaldo Energia
E. POGGIO¹, S. BUDANO²
¹Ansaldo Energia (AEN) S.p.A., Genoa, I
²Centro Sviluppo Materiali (CSM) S.p.A., Rome, I

15:10 **L39**
Quantification of the load drop crack initiation criterion of LCF tests of ferritic steels
J. DENK
 Department Materials & Chemistry, Alstom Switzerland Ltd., Baden, CH

15:30 **L40**
Estimation of the strain-life curve from incremental step test data
R. WAGENER, A. ESDERTS
 TU Clausthal, Institut für Maschinelle Anlagentechnik und Betriebsfestigkeit, Clausthal-Zellerfeld, D

15:50 **L41**
Standardization of low-cycle-fatigue tests on thin steel sheet
C.-P. BORK¹, R. MASENDORF², U. MAY³, H. OPPERMANN⁴, G. STEINBECK⁵, A. ESDERTS², R. WAGENER³, T. MEDHURST²
¹Federal Institute for Materials Research and Testing, Berlin, D
²Institute of Plant Engineering and Fatigue Analysis, Clausthal-Zellerfeld, D
³Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, D
⁴BMW Group, München, D
⁵Thyssenkrupp Steel AG, Duisburg, D

HALL IV/V - Parallel Session F2

Lightweight materials: Polymer Matrix Composites

Chair: W. EICHLSEDER, University of Leoben, Chair of Mechanical Engineering, A

14:30 **L42**
An evaluation of interfacial strength in PMC under static and cyclic loadings
H. OGAWA, K. HATANAKA
 Ube National College of Technology, Ube, Yamaguchi, J

14:50 **L43**
Creep-fatigue interaction in a polymer matrix composite
A. PLUMTREE, J.H. DAHL
 Department of Mechanical and Mechatronics Engineering, University of Waterloo, Waterloo, Ontario, CDN

15:10 **L44**
Evaluation of the non-linear stress-strain behaviour of CFRP during fatigue testing with inner state variables
V. TRAPPE
 Federal Institute for Materials Research and Testing BAM, Berlin, D

Nuclear applications

15:30 **L45**
Some aspects of temperature history on cyclic behaviour of an austenitic stainless steel
D. GENTET^{1,2}, M. RISBET³, X. FEAUGAS², P. PILVIN⁴, M.-TH. CABRILLAT¹, Y. LEJEAIL¹
¹CEA/DEN/DER/SESI/LCSI CEA-Cadarache, Paul-lez-Durance, F
²LEMMA, Université de la Rochelle, F
³Laboratoire Roberval, Université de Technologie de Compiègne, F
⁴LIMATB, Université de Bretagne-Sud, Lorient, F

15:50 **L46**
Cyclic deformation behaviour under dynamic strain ageing regime in austenitic stainless steel at high temperatures
D. GENTET^{1,2}, S. CATALAO^{1,3}, X. FEAUGAS², P. PILVIN³, M.-TH. CABRILLAT¹, Y. LEJEAIL¹
¹CEA/DEN/DER/SESI/LCSI CEA-Cadarache, St Paul-lez-Durance, F.
²LEMMA, Université de la Rochelle, F
³LIMATB, Université de Bretagne-Sud, Lorient, F

Sightseeing Tour – Guided Walk

- 16:30 Bus departure from Logenhaus (conference location)
- 17:30 Meeting at Reichstag, the German Parliament and start of walking tour (2 hours) which takes you through the parliament district to Brandenburg Gate, the new US embassy, the Holocaust memorial and Potsdamer Platz.
- 20:00 End of tour at Gendarmenmarkt
A large range of bars and restaurants is situated close to the Gendarmenmarkt, one of the most beautiful squares in Europe.

HALL I - Plenary Session G

Ultra fine grained materials

Chair: A. PLUMTREE, Department of Mechanical and Mechatronics Engineering, University of Waterloo, Waterloo, Ontario, CND

- 09:00 **P3**
Plenary Lecture:
Fatigue of ultrafine-grained copper
P. LUKÁŠ, L. KUNZ, M. SVOBODA
Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ
- 09:30 **L47**
Large deformation fatigue and damage of flexible cellular foams
K. ISHIKAWA, Y. KOBAYASHI
Toyo University, Faculty of Engineering, Kawagoe, Saitama, J
- 09:50 **L48**
Fatigue behavior of biocompatible ultrafine-grained niobium zirconium
F. RUBITSCHKEK¹, T. NIENDORF¹, H.J. MAIER¹, I. KARAMAN², M. HAOUAOUI²
¹ Lehrstuhl für Werkstoffkunde, Universität Paderborn, D
² Texas A&M University, Department of Mechanical Engineering, College Station, TX, USA.
- 10:10 **L49**
Influence of grain size on fatigue properties of Ti-6Al-4V ELI alloy
L.R. SAITOVA, H.W. HÖPPEL, M. GÖKEN
Department of Materials Science and Engineering, Institute I: General Materials Properties, University Erlangen-Nürnberg, Erlangen, D
- 10:30 **L50**
Fatigue behaviour of ufg al: influence of the ECAP route and the magnesium alloying content
H. W. HÖPPEL¹, J. MAY², M. GÖKEN¹
¹ Department of Materials Science and Engineering, Institute I: General Materials Properties, University Erlangen-Nürnberg, Erlangen, D
² now at: AREVA NP, Erlangen, D
- 10:50-11:20 **Break/Posters**

HALL IV/V - Parallel Session H1**Creep-fatigue interaction**

Chair: P. LUKÁŠ, Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ

- 11:20 **L51**
Creep-fatigue damage characterisation
*L. BINDA*¹, *S.R. HOLDSWORTH*¹, *E. MAZZA*^{1,2}
¹ EMPA: Swiss Federal Laboratory for Materials Testing & Research, Dübendorf, CH
² ETH: Swiss Federal Institute of Technology, Dept. of Mechanical and Process Engineering, Zürich, CH
- 11:40 **L101**
Development of reliable fatigue life prediction processes for light weight exhaust systems
*M. NAGODE*¹, *M. HACK*², *L. DEDENE*³, *M. FAJDIGA*¹
¹ University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, SLO
² LMS International, Kaiserslautern, D
³ BOSAL Research N.V., Lummen, B
- 12:00 **L52**
Interaction between creep and low cycle fatigue at high temperature of a nickel-base superalloy Udimet 720
T. BILLOT, *P. VILLECHAISE*, *M. JOUIAD*, *J. MENDEZ*
 Laboratoire de Mécanique et de Physique des Matériaux, Futuroscope Chasseneuil, Poitiers, F
- 12:20 **L53**
Effect of tensile dwell on low cycle fatigue of cast superalloy Inconel713LC at 700°C
K. OBRTLÍK, *M. PETRENEC*, *J. MAN*, *J. TOBIÁŠ*, *J. POLÁK*
 Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ

12:40 – 14:30 **Break**

HALL IV/V - Parallel Session H2**Fe based alloys**

Chair: B. KARLSSON, Department of Materials and Manufacturing Technology; Chalmers University of Technology, Göteborg, S

- 11:20 **L56**
Effect of dynamic strain aging on high temperature low cycle fatigue of ferritic ductile cast iron
*H. MOURI*¹, *M. HAYASHI*², *W. WUNDERLICH*³
¹ Unified Graduate School of Engineering, Tokai University, Kanagawa, J
² Department of Mechanical Engineering, Faculty of Engineering, Tokai University, Kanagawa, J
³ Department of Material Science, Faculty of Engineering, Tokai University, Kanagawa, J
- 11:40 **L57**
Low cycle fatigue behaviour of cast irons at different temperatures
A. UIHLEIN, *K.-H. LANG*, *D. LÖHE*
 Universität Karlsruhe (TH), Institut für Werkstoffkunde I, Karlsruhe, D
- 12:00 **L58**
Influence of ambient temperature on steel sheet in LCF tests
*T. MEDHURST*¹, *R. MASENDORF*¹, *C.-P. BORK*², *U. MAY*³, *H. OPPERMANN*⁴, *G. STEINBECK*⁵, *R. WAGENER*³
¹ Institute of Plant Engineering and Fatigue Analysis, Clausthal-Zellerfeld, D
² Federal Institute for Materials Research and Testing, Berlin, D
³ Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, D
⁴ BMW Group, München, D
⁵ Thyssenkrupp Steel AG, Duisburg, D
- 12:20 **L59**
Scattering of cyclic material parameters of different lots of sheet metal TRIP 700
T. MEDHURST, *R. MASENDORF*, *A. ESDERTS*,
 Technical University of Clausthal, Institute of Plant Engineering and Fatigue Analysis,
 Leibnizstraße 32, 38678 Clausthal-Zellerfeld, D
- 12:40 **L60**
Microstructure and torsional fatigue behaviour of SAE1012M and SAE 1020 dual phase steel tubes
M. PREETHI^{1,2}, *A. SUDHEER*², *P. SHANMUGAM*¹, *V. SUDHARSAN*¹, *V. SUBRAMANYA SARMA*²
¹ Research & Development Department, Tube Investments of India, Chennai, IND
² Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, Chennai, IND

13:00 – 14:30 **Break**

Monday 08-09-08		Tuesday 08-09-09		Wednesday 08-09-10		Thursday 08-09-11		Friday 08-09-12	
		08:30	Registration	08:30		08:30		08:30	
09:30	Registration	09:00	Session D Thermal fatigue / Thermomechanical fatigue	09:00	Session G Ultra fine grained materials	09:00	Session K Damage, crack initiation and crack growth	09:00	Session N Design methods, life prediction
10:00	Opening Session A Isothermal low cycle fatigue	10:00		10:00		10:00			
10:45		10:50	Break / Posters	10:50	Break / Posters	10:50	Break / Posters	10:50	Break / Posters
		11:20	E1 Thermal fatigue / Thermomechanical fatigue	11:20	H1 Creep-fatigue interaction	11:20	L1 Damage, crack initiation, crack growth	11:20	O1 Design methods, life prediction
			E2 Lightweight materials: Al based alloys, MMC		H2 Fe based alloys		L2 Lightweight materials: Mg alloys, Ti alloys		O2 Influence of processing
12:00	Break	13:00	Break	13:00	Break	13:00	Break	13:00	Break
13:30	B1 Multiaxial loading								
	B2 Microstructural aspects								
		14:30	F1 Experimental issues	14:30	I1 Ni based alloys	14:00	M1 Damage, crack initiation, crack growth	14:30	Session P LCF: general aspects; environmental effects Closing
15:10	Break / Posters		F2 Lightweight materials PMC Nuclear applications		I2 Fe based alloys		M2 Experimental aspects		
15:40	C1 Multiaxial loading	16:10		15:50	Break / Posters	15:40	Technical Visit	16:10	
	C2 Microstructural aspects	16:30		16:20	J1 Ni based alloys				
17:00			Sightseeing		J2 Fe based alloys				
18:00	Welcome reception			18:00		18:00			
20:00		20:00		19:00		19:30	Conference Dinner		

HALL I - Parallel Session I1**Ni based alloys**

Chair: S. HOLDSWORTH, EMPA: Swiss Federal Laboratory for Materials Testing & Research, Dübendorf, CH

- 14:30 **L61**
SC16 at 950°C under Icf loading on smooth cylindrical specimen: influence of secondary orientation
*V. BONNAND*¹, *H. KLINGELHÖFFER*²
¹ formerly: Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, D
² currently: ONERA, Chatillon, F
² Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, D
- 14:50 **L62**
Low cycle fatigue of the single crystal nickel-base superalloy CMSX-4: anisotropy and effect of creep damage
*H. KLINGELHÖFFER*¹, *A. EPISHIN*², *T. LINK*², *P.D. PORTELLA*¹
¹ Federal Institute for Materials Research and Testing, Division V.2 Mechanical Behaviour of Materials, Berlin, D
² Technical University Berlin, Institute for Materials Science and Technologies, Berlin, D
- 15:10 **L63**
Modelling of high temperature crack growth in a single crystal superalloy under low cycle fatigue loading
*B. FEDELICH*¹, *Y. KIYAK*¹, *M. TOULIOS*², *G. VOUDOURIS*²
¹ Bundesanstalt für Materialforschung und -prüfung, Berlin, D
² School of Naval Architecture and Marine Engineering, NTUA, Athens, GR
- 15:30 **L64**
 Γ/γ' morphological changes in single crystal Ni-base superalloys under cyclic loadings: A new morphological analysis for fatigue damage detection
M. SAKAGUCHI, *M. OKAZAKI*
 Department of Mechanical Engineering, Nagaoka University of Technology,
 Nagaoka, Niigata, J

15:50 – 16:20 **Break/Posters**

HALL IV/V - Parallel Session I2**Fe based alloys**

Chair: A. CONSTANTINESCU, CEA Saclay, Gif sur Yvette, F

- 14:30 **L65**
Cyclic deformation behaviour and fatigue life calculation of metastable austenitic steels
M. SMAGA, *F. WALTHER*, *D. EIFLER*
 University of Kaiserslautern, Institute of Materials Science and Engineering, Kaiserslautern, D
- 14:50 **L66**
Influence of low temperature plasma nitriding on the LCF properties of the 316L austenitic stainless steel
J.C. STINVILLE^{1,2,3}, *P. VILLECHAISE*², *J.P. RIVIERE*³, *C. TEMPLIER*³, *M. DROUET*³
¹ PPRIMME Federation: Laboratoire de Physique et Mécanique des Matériaux, ENSMA–Laboratoire de Physique des Matériaux, University of Poitiers
² Laboratoire de physique et mécanique des matériaux (LMPM), Poitiers, F
³ Laboratoire de physique des matériaux (PHYMAT), SP2MI, Poitiers, F
- 15:10 **L67**
Low cycle fatigue in reversed torsion mode in a superduplex stainless steel
J. STOLARZ, *X. YUN*
 Ecole Nationale Supérieure des Mines, Saint-Etienne, F
- 15:30 – 16:20 **Break/Posters**

HALL I - Parallel Session J1**Ni based alloys**

Chair: S. DEGALLAIX, Laboratoire de Mecanique de Lille, Ecole Centrale de Lille, Villeneuve d'Ascq, F

- 16:20 **L69**
Influence of a β -NiAl coating on monocrystalline nickel-base alloys on the thermo-mechanical fatigue life
R. NÜTZEL¹, E. AFFELDT², M. GÖKEN¹
¹ University Erlangen-Nürnberg, Department of Materials Science and Engineering, Institute I: General Materials Properties, Erlangen, D
² MTU Aero Engines, München, D
- 16:40 **L70**
Effect of pre-ageing on the low cycle fatigue behaviour of a coated nickel-based superalloy
M. BARTSCH¹, S. DALKILIÇ², L. CERNOVA¹, A. TANATMIŞ²
¹ German Aerospace Center – DLR, Institute of Materials Research, Köln, D
² Anadolu University, School of Civil Aviation, Eskişehir, TR
- 17:00 **L71**
Low cycle fatigue of tig butt-welded in 718 at 620°C
D.W.J. TANNER¹, A.A. BECKER, T.H. HYDE
 School of Mechanical, Materials and Manufacturing Engineering, University of Nottingham, Nottingham NG7 2RD, UK
- 17:20 **L72**
Strength of MAR M247/in 718 dissimilar metals joint under creep-fatigue and thermo-mechanical fatigue loadings
T. H. TRAN¹, M. OKAZAKI¹, M. SAKAGUCHI¹, M. SEKIHARA²
¹ Nagaoka University of Technology, Kamitomioka J
² Hitachi Ltd., Material Research Lab., Saiwai-cho, Hitachi-shi, J
- 17:40 **L73**
Low cycle fatigue behavior of sandwich structures for cooling thermally highly loaded steam turbine components
P. BEISS¹, E. EL-MAGD², J. STUHRMANN¹
¹ RWTH Aachen University, Institute for Materials Applications in Mechanical Engineering, Aachen, D
² RWTH Aachen University, Institute of Material Science, Aachen, D

HALL IV/V - Parallel Session J2**Fe based alloys**

Chair: A. A. SHANYAVSKIY, State Centre for Civil Aviation Flight Safety, Moscow, R

- 16:20 **L74**
A comparative study of isothermal and thermomechanical fatigue on type 316L(N) austenitic stainless steel
A. NAGESHA¹, M. VALSAN¹, K. B. SANKARA RAO¹, B. RAJ¹, V. SINGH²
¹ Indira Gandhi Centre for Atomic Research, Kalpakkam, IND
² Centre of Advanced Study, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi, IND
- 16:40 **L75**
Unloading stiffness of near fully pearlitic steel UIC-R8/R8T during cyclic plastic straining
M. HÖRNQVIST, B. KARLSSON, J. AHLSTRÖM
 Department of Materials and Manufacturing Technology, Chalmers University of Technology, Göteborg, S
- 17:00 **L76**
Fatigue damage in the EUROFER steel
T. KRUML, K. OBRTLÍK, M. PETRENEC, J. ŠTERBÁČEK, J. POLÁK
 Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ
- 17:20 **L77**
Analysis of the material response in the low cycle fatigue regime of notched cylindrical bars in medium carbon steel
G. MENEGHETTI, L. SUSMEL
 University of Padova, Department of Mechanical Engineering, Padova, I
- 17:40 **L96**
Micro- and short crack network evolution during LCF in different austenitic stainless pipe steels
H. J. LEBER, B. TIRBONOD, M. NIFFENEGGER, M. RAMESH
 Paul Scherrer Institut, Nuclear Energy and Safety Res. Dep., Laboratory for Nuclear Materials, Villigen PSI, CH

HALL I - Plenary Session K

Damage, crack initiation, crack growth

Chair: E. ROOS, Universität Stuttgart (MPA) Institut für Materialprüfung, Werkstoffkunde und Festigkeitslehre (IMWF), Stuttgart, D

09:00 **P4**

Plenary Lecture

R. PIPPAN

Österreichische Akademie der Wissenschaften, Erich-Schmid-Institut für Festkörperphysik, Leoben, A

09:30

L54

Award of the August Woehler Medal

Simulation of creep fatigue loading of the heated surface of a steam turbine rotor based on a constitutive material law

A. SCHOLZ, A. SIMON, C. BERGER

Institut für Werkstoffkunde, Technische Universität Darmstadt, D

10:10

L80

Fatigue crack growth and its tip opening displacement in cartridge brass

M. HAYASHI

Department of Mechanical Engineering, Tokai University, Kanagawa, J

10:30

L81

Crack initiation and propagation behaviour for copper thin films

S. ZHANG¹, Y. UMEMURA¹, M. SAKANE¹, Y. TSUKATA²

¹ Department of Mechanical Engineering, Ritsumeikan University, Shiga, J

² KYOCERA SLC Technologies Corporation, Shiga, J

10:50 – 11:20

Break/Posters

HALL I - Parallel Session L1**Damage, crack initiation, crack growth**

Chair: R. PIPPAN, Österreichische Akademie der Wissenschaften,
Erich-Schmid-Institut für Festkörperphysik, Leoben, A

- 11:20 **L82**
Mean stress effect by incremental two scale damage model
G. BARBIER^{1,2}, R. DESMORAT¹, J.-P. SERMAGE², A. DU TERTRE³, S. COURTIN⁴, J. DEHOUE⁵, D. TCHOU-KIEN⁵
¹ LMT Cachan, F
² EDF R&D Clamart, F
³ Snecma Space Engine Division SAFRAN Group, Vernon, F
⁴ AREVA NP, Tour AREVA, Paris La Défense, F
⁵ CNES, Evry, F
- 11:40 **L84**
Modeling of fatigue crack propagation under mixed modes loading using an energy approach
V. V. PANASYUK, Y. L. IVANYTSKYI, P. S. KUN
Karpenko Physico-Mechanical Institute, National Academy of Sciences of Ukraine, Lviv, UA
- 12:00 **L85**
Nominal stress effects on the size and shape of plastic zones
H.Z. RODRIGUEZ, J.T.P. CASTRO, M.A. MEGGIOLARO
PUC-Rio, Rio de Janeiro, BR
- 12:20 **L86**
Fatigue crack growth modeling in single crystals based on higher-order continua
O. ASLAN, S. FOREST
Centre des Materiaux / Mines Paris, CNRS, Evry Cedex, F

12:40 – 14:00 **Break**

HALL IV/V - Parallel Session L2**Lightweight materials: Mg alloys, Ti alloys**

Chair: K.-H. LANG, Universität Karlsruhe (TH), Institut für Werkstoffkunde I,
Karlsruhe, D

- 11:20 **L87**
Thermal fatigue of Mg-base alloy AZ91
M. KRAUSS, B. SCHOLTES
University of Kassel, D
- 11:40 **L88**
On the fatigue behaviour of wrought magnesium alloys
L. FUSKOVA, J. BOHLEN, D. LETZIG
magic – Magnesium Innovation Centre, GKSS Research Centre Geesthacht GmbH, D
- 12:00 **L89**
Thermal fatigue behaviour of two titanium-based alloys
T.K. HECKEL, H.-J. CHRIST
Universität Siegen, Institut für Werkstofftechnik, Siegen, D
- 12:20 **L90**
Isothermal and thermomechanical fatigue of a third-generation gamma-TiAl alloy
H.-J. CHRIST, V. BAUER
Universität Siegen, Institut für Werkstofftechnik, D
- 12:40 **L91**
The 455°C fatigue behavior of boron-modified Ti-6Al-4V (wt.%)
W. CHEN, C.J. BOEHLERT
Department of Chemical Engineering and Materials Science, Michigan State University, East Lansing, USA

13:00 – 14:00 **Break**

HALL I - Parallel Session M1**Damage, crack initiation, crack growth**

Chair: M. HAYASHI, Department of Mechanical Engineering, Faculty of Engineering, Tokai University, Kanagawa, J

- 14:00 **L93**
Investigating microstructural damage mechanisms from first dislocation emission till fatigue crack propagation
M. MARX, M. T. WELSCH, W. SCHÄF, H. VEHOFF
 Saarland University, Institute of Materials Science and Methods, Saarbrücken, D
- 14:20 **L94**
Influence of microstructural barriers on short fatigue crack growth
W. SCHÄF, M. MARX, H. VEHOFF
 Saarland University, Institute of Materials Science and Methods, Saarbrücken, D
- 14:40 **L95**
Development of dislocation structures previous to fatigue crack initiation
M. T. WELSCH, M. MARX, H. VEHOFF
 Saarland University, Institute of Materials Science and Methods, Saarbrücken, D
- 15:00 **L121**
Surface flaw growth prediction in a pipe under biaxial loading accounting for constraint effects along crack front
V. N. SHLYANNIKOV, R. F. SHAGIVALEEV, R. R. YARULLIN
 Russian Academy of Sciences, Research Center for Power Engineering Problems, Kazan, 420111, Russia
- 15:40 **Technical Visits**
Details and lists will be made available during the conference.
 The number of participants is limited.
- 19:30 **Conference Dinner**
 at the conference location

HALL IV/V - Parallel Session M2**Experimental aspects**

Chair: T. ŁAGODA, Opole University of Technology, Faculty of Mechanical Engineering, Department of Mechanics and Machine Design, Opole, PL

- 14:00 **L92**
Mechanisms associated with the formation of fatigue striations in low-cycle-fatigue regime
A. SHANYAVSKIY
 State Centre for Civil Aviation Flight Safety, Moscow, R
- 14:20 **L97**
Laboratory fatigue test of a full-scale steel culvert
L. KORUSIEWICZ¹, B. KUNECKI²
¹ Wroclaw University of Technology, Wroclaw, PL
² The Norwegian University of Science and Technology, Trondheim, N
- 14:40 **L98**
Apparatus for biaxial fatigue testing
S. LEMMER¹, C. LESER¹, P. PERALTA², A. CHATTOPADHYAY²
¹ MTS Systems Corporation, Eden Prairie, MN, USA
² Arizona State University, Mechanical & Aerospace Engineering, USA
- 15:00 **L99**
The use of acoustic emission to determine damage evolution during cyclic loading of wire reinforced AlSiMg0.5 matrix
M. MERZKIRCH, K. A. WEIDENMANN, E. KERSCHER, D. LÖHE
 Institut für Werkstoffkunde I, Universität Karlsruhe (TH), D
- 15:40 **Technical Visits**
Details and lists will be made available during the conference.
 The number of participants is limited.
- 19:30 **Conference Dinner**
 at the conference location

HALL I - Plenary Session N

Design methods, life prediction

Chair: J. POLÁK, Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, CZ

09:00 **P5**
Plenary Lecture
E. CHARKALUK
CNRS - Laboratoire de Mécanique de Lille, Villeneuve D'Asq, F

09:30 **L109**
Cyclic parameters for non-compatible material behaviour
*C. EL DSOKI¹, V. LANDERSHEIM¹, H. HANSELKA¹, A. NIESŁONY²,
H. KAUFMANN³, P. KRUG⁴*
¹ Chair of System Reliability and Machine Acoustics (SZM), TU-Darmstadt, D
² Opole University of Technology, PL
³ Fraunhofer Institute for Structural Durability and System Reliability LBF, D
⁴ PEAK Werkstoff GMBH, Velbert, D

09:50 **L26**
Lifetime predictions for a mixing tee under thermal loading using the stress-strength method
S. AMIABLE, S. CHAPULIOT, A. CONSTANTINESCU, A. FISSOLO
CEA Saclay, Gif sur Yvette, F

10:10 **L103**
Remaining life assessment of high temperature steam turbine components
A. BAGAVIEV, Y. PAN, M. SIEGEL
Siemens AG, Mülheim, D

10:30 **L104**
Plasticity-damage coupling in fatigue modelling: first steps toward a link between HCF and LCF
E. CHARKALUK
CNRS - Laboratoire de Mécanique de Lille, Villeneuve D'Asq, F

Poster only O2

Low cycle fatigue of several steam turbine rotor steels at elevated temperatures
V. MENTL, M. CHOCHOLOUSEK
Dept. of Material Science and Technology University of West Bohemia, Pilsen, CZ

10:50 – 11:20 **Break/Posters**

HALL I - Parallel Session O1**Design methods, life prediction**

Chair: E. CHARKALUK, Laboratoire de Mécanique de Lille – UMR CNRS, Villeneuve d'Ascq, F

- 11:20 **L105**
Influence of cyclic stress-strain curve parameters on fatigue life estimation
A. KAROLCZUK, T. ŁAGODA, K. WALAT
 Opole University of Technology, Faculty of Mechanical Engineering, Department of Mechanics and Machine Design, Opole, PL
- 11:40 **L106**
Assessment of fatigue life under combined cycle for Ti-6Al-4V
H. NAKAMURA¹, Y. YAMASHITA¹, H. KUROKI², M. SHINOZAKI²
¹ Research Laboratory, IHI Corporation, Yokohama J
² Aero-Engine & Space Operations, IHI Corporation, Tokyo, J
- 12:00 **L107**
The evaluation of low-cycle fatigue life for notched specimen of high strength steel
T. MAKINO¹, Y. NEISHI¹, T. HAMADA²
¹ Sumitomo Metal Industries, Ltd., Hyogo, J
² Sumitomo Metals (Kokura), Ltd., Kitakyushu, J
- 12:20 **L108**
Formed thin sheet structures - concepts for fatigue life calculation
K. HINKELMANN, R. MASENDORF, K. NIKKEL, A. ESDERTS, T. MEDHURST
 Institute of Plant Engineering and Fatigue Analysis, Clausthal-Zellerfeld, D
- 12:40 **L109**
Effects of LCF loadings on the HCF life of notched specimens in ferritic-bainitic steel
H. BIDOUCARD^{1,2}, T. PALIN-LUC¹, N. SAINTIER¹, C. DUMAS², C. EL DSOKI³, H. KAUFMANN³, C. M. SONSINO³
¹ ENSAM, CER de Bordeaux, Université Bordeaux 1, Laboratoire Matériaux Endommagement Fiabilité et Ingénierie des Procédés (EA 2727), Talence, F
² RENAULT, Guyancourt, F
³ Fraunhofer Institute for Structural Durability and System Reliability, LBF, Darmstadt, D

13:00 – 14:30 **Break**

HALL IV/V - Parallel Session O2**Influence of processing**

Chair: L. SUSMEL, Department of Engineering, University of Ferrara, I

- 11:20 **L110**
Creep fatigue in hot work tool steels during copper extrusion
F. KRUMPHALS¹, T. WLANIS¹, C. SOMMITSCH^{1,2}, B. BUCHNER², D. HUBER¹, C. REDL³, V. WIESER³
¹ Christian Doppler Laboratory for Materials Modelling and Simulation, University of Leoben, A
² Chair of Metal Forming, University of Leoben, A
³ Böhler Edelstahl GmbH & Co KG, Kapfenberg, A
- 11:40 **L111**
Influence of multiaxial forming on the cyclic behaviour from steel sheet
R. MASENDORF¹, A. ESDERTS¹, T. MEDHURST¹, D. SÜSSE², M. SCHATZ²
¹ Technical University of Clausthal, Institute of Plant Engineering and Fatigue Analysis, Clausthal-Zellerfeld, D
² Technical University of Dresden, Institute of Forming Production Engineering, Dresden, D
- 12:00 **L112**
Damage assessments and modeling of tools
F. RÉZAI-ARIA, C. BOHER, P. LAMSELS, M. SHAH, M. SALEM, S. LE ROUX, C. MABRU
 Ecole Mines Albi, F
- 12:20 **L113**
Effect of cold rolling on elimination of bilinearity from C-M relationship in LCF of timental 834
M. K. TRIPATHI¹, K. V. S. SRINADH², N. SINGH³, V. SINGH¹
¹ Centre of Advanced Study, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi, IND
² Department of Mechanical Engineering, NIT, Warangal, IND
³ National Metallurgical Laboratory, CSIR Madras Complex, Chennai, IND
- 12:40 **L114**
Effect of surface modification on low-cycle fatigue strength of titanium alloys
A.P. GOPKALO, A.V. RUTKOVSKYY, V.I. KALINICHENKO
 G.S. Pisarenko Institute for Problems of Strength, National Ac. Sci. of Ukraine, Kyiv, UA

13:00 – 14:30 **Break**

HALL I - Plenary Session P**LCF: general aspects; environmental effects**

Chair: T. BECK, Forschungszentrum Jülich, D

14:30 **L116**

On the cyclic softening behavior of a duplex stainless steel

I. ALVAREZ-ARMAS¹, P. EVRARD², V. AUBIN², S. DEGALLAIX²

¹ Instituto de Física Rosario, CONICET - Universidad Nacional de Rosario, RA

² Laboratoire de Mécanique de Lille (UMR CNRS 8107), Ecole Centrale de Lille, Villeneuve d'Ascq, F

14:50 **L117**

A bi-phased polycrystalline model for the cyclic softening of a duplex stainless steel in uniaxial and biaxial cyclic loading

P. EVRARD¹, V. AUBIN¹, S. DEGALLAIX¹, D. KONDO¹,

I. ALVAREZ-ARMAS²

¹ Laboratoire de Mécanique de Lille, Ecole Centrale de Lille, Villeneuve d'Ascq, F

² Instituto de Física Rosario, CONICET . Universidad Nacional de Rosario, RA

15:10 **L118**

Low-high cycle fatigue of titanium alloys covered by chromium layer

A. SHANYAVSKIY, YU. POTAPENKO, S. VASHENTSEVA

State Centre for Civil Aviation Flight Safety, Moscow, R

15:30 **L119**

Fatigue behaviour of a 9Cr1MoNb-V martensitic steel in a liquid metal

J.-B. VOGT, I. SERRE, A. VERLEENE

Université des Sciences et Technologies de Lille, Laboratoire de Métallurgie Physique et Génie des Matériaux, Villeneuve d'Ascq, F

15:50 **L120**

A case study on corrosion-thermal fatigue damage

J.T.P. CASTRO, R.D. VIEIRA, A.C.N. VIDAL, A.C.O. MIRANDA, J.L.F.

FREIRE, M.A. MEGGIOLARO

PUC-Rio, Rio de Janeiro, BR

16:10 **End of Conference**

Fretting fatigue**Poster only 03**

The evolution of contact variables due to fretting wear in press-fitted shaft

D.-H. LEE, S.-J. KWON, H.-K. JUN, W.-H. YOU

Railway System Research Department, Korea Railroad Research Institute, Uiwang, Kyonggi, ROK

Exhibition

LMS Germany GmbH, www.lmsgermany.com
 MTS Systems GmbH, www.mts.com
 Zwick GmbH & Co.KG, www.zwick.de

Conference Location

Logenhaus
 Emser Str. 12-13
 10719 Berlin-Wilmersdorf
 Germany
www.logenhaus.de

Conference Desk

Monday, September 8, 2008: 09:30 – 15:40
 Tuesday, September 9, 2008: 08:30 – 14:30
 Wednesday, September 10, 2008: 08:30 – 16:20
 Thursday, September 11, 2008: 08:30 – 14:00
 Friday, September 12, 2008: 08:30 – 14:30

Conference Telephone

Tel.: +49 (0)176 5301 0218 (only during the conference!),
 Fax: +49 (0)30 861 9822

Travel

General information about Berlin: www.visitberlin.de
 Conference location: www.logenhaus.de, column "Lage" for a map
 and "Wegbeschreibung" for a description of how to get there.

Parking and Public Transport

Parking space management 0,25 EUR/15 min.
 Information about public transport: www.bvg.de

Accommodation

AVALON Hotel Berlin

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 10719 Berlin - Wilmersdorf
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berlin-kudamm@motel-one.com
www.motel-one.com

Golden Tulip Berlin - Hotel Hamburg

(Location LCF6 Welcome Reception)
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 Tel: +49 (0)30 2647 70
 Fax: +49 (0)30 2629 394
info@goldentulipberlin.de
www.goldentulipberlin.de

Best Western Hotel Steglitz International

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 12165 Berlin-Steglitz
 Tel.: +49 (0)30 7900 5521
 Fax: +49 (0)30 7900 5530
info@steglitz.bestwestern.de
www.si-hotel.com

Registration Fees:

Member of DVM	850,00 €
Non-member	950,00 €
Author/Co-author	760,00 €

Registration fee does not include hotel accommodation. Participants are responsible for booking their accommodation accordingly.

Bank accounts of the DVM:

Bank Accounts:
 Deutscher Verband für Materialforschung und –prüfung
 Berliner Sparkasse
 Bank Code No.: 100 500 00, Account No.: 1 220 012 188
 IBAN: DE61 1005 0000 1220 0121 88, BIC: BELADEBE
 Deutscher Verband für Materialforschung und –prüfung
 Postbank Berlin
 Bank Code No.: 100 100 10, Account No.: 0 392 903 109
 IBAN: DE71 1001 0010 0392 9031 09, BIC: PBNKDEFF

All participants will receive a confirmation of participation at the conference.

Information

DVM Deutscher Verband für Materialforschung und –prüfung e.V.
 Unter den Eichen 87, 12205 Berlin, Germany
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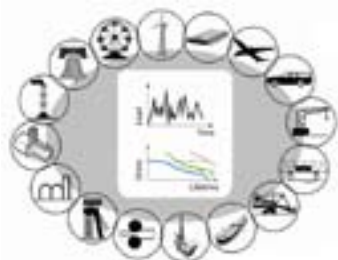
Upcoming international events

Second International Conference on Material and Component Performance under Variable Amplitude Loading – VAL2

March 23, 2009 – March 26, 2009

Darmstadt, Germany

www.val2.de



Eighteenth European Conference on Fracture – ECF18

August 29 – September 03, 2010

Dresden, Germany

www.ecf18.de

