



Ing. Ladislav Falat

PhD. student (till September 30th 2009)

contact

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CURRICULUM, EDUCATION

- 2006-2009 PhD student at IMR SAS Košice, Dept. of diffusion and transformation processes in metallic systems, Title of PhD thesis: Microstructure and creep of dissimilar α/γ weld-joints
- 2001-2004 Max Planck Institute for Iron Research, Düsseldorf, Germany
- 1996-2001 Faculty of Metallurgy – Chair of Materials Science, Technical University of Košice
- 1992-1996 Secondary grammar school Šrobárova in Košice

LINGUISTIC SKILLS

- English- advanced, German- advanced

SCIENTIFIC ACTIVITIES

- Metallic creep-resistant materials and their weld-joints (for power-plant industry)
- Determination of mechanical properties of metallic materials (strength, plasticity, hardness, creep)
- Fractographic analysis (failure modes and fracture mechanisms)
- Microstructural analysis (LM, SEM, EDX, TEM, XRD)

TEACHING ACTIVITIES

PROJECTS (COORDINATOR, PARTICIPANT)

participant

- Influence of annealing parameters on the microstructure and properties of heterogeneous weld joints and bends of progressive steels, VEGA 2/7197/27, 2007- 2009
- Weldability of new generation creep steels for high efficiency power plant units, APVV-99-045105, 2006-2009
- Precipitation processes and embrittlement in advanced 9-12 % Cr steels and their weld joints, COST-Action 536, 2005-2009
- Material characterization for the plant components remnant life prediction, COST-Action 538, 2005-2008
- Thermodynamic analysis of binary and ternary systems with boron, VEGA 2/6207/26, 2006-2008.

STAYS ABROAD – long-term

- 2001-2004 Max Planck Institute for Iron Research, Düsseldorf, Germany

STAYS ABROAD – short-term

- October 26-28, 2008 Training School „COST 536“ Lanzarote, Spain

MEMBERSHIPS

- **Verein Deutscher Eisenhüttenleute (VDEh) 2001-2004**

AWARDS

- **1st award** in the seventh student's scientific and expert conference METALLURGY 2001 in the section MATERIALS PROCESSING
- **Award of the General Research & Development Manager of US Steel Košice, Ltd.** for the best student's scientific work dealing with solution of problems of the US Steel company Košice.
- **Medal of the the Faculty of Metallurgy** for the excellent study results during the engineering study.

NUMBER OF PUBLICATIONS: 6 impacted CC-publications

NUMBER OF CITATIONS: 30 citations in CC-publications

SELECTED PUBLICATIONS – MPIE Düsseldorf

- 1) **L. Falat**, A. Schneider, G. Sauthoff and G. Frommeyer: Mechanical properties of Fe–Al–M–C (M=Ti, V, Nb, Ta) alloys with strengthening carbides and Laves phase.
Intermetallics (Impact factor: **2.034**), *Volume 13, Issue 12, December 2005, Pages 1256-1262*
- 2) A. Schneider, **L. Falat**, G. Sauthoff and G. Frommeyer: Microstructures and mechanical properties of Fe₃Al-based Fe–Al–C alloys.
Intermetallics (Impact factor: **2.034**), *Volume 13, Issue 12, December 2005, Pages 1322-1331*
- 3) D. Risanti, J. Deges, **L. Falat**, S. Kobayashi, J. Konrad, M. Palm, B. Pöter, A. Schneider, C. Stallybrass and F. Stein: Dependence of the brittle-to-ductile transition temperature (BDTT) on the Al content of Fe–Al alloys.
Intermetallics (Impact factor: **2.034**), *Volume 13, Issue 12, December 2005, Pages 1337-1342*
- 4) A. Schneider, **L. Falat**, G. Sauthoff and G. Frommeyer: Constitution and microstructures of Fe–Al–M–C (M=Ti, V, Nb, Ta) alloys with carbides and Laves phase.
Intermetallics (Impact factor: **2.034**), *Volume 11, Issue 5, May 2003, Pages 443-450*

SELECTED PUBLICATIONS – IMR SAS Košice

- 5) Juraj Blach, **Ladislav Falat**, Peter Ševc: Fracture characteristics of thermally exposed 9Cr–1Mo steel after tensile and impact testing at room temperature.
Engineering Failure Analysis (Impact factor: **0.441**), *Volume 16, Issue 5, July 2009, Pages 1397-1403*
- 6) **L. Falat**, A. Výrostková, V. Homolová, M. Svoboda: Creep deformation and failure of E911/E911 and P92/P92 similar weld-joints.
Engineering Failure Analysis (Impact factor: **0.441**), *Volume 16, Issue 7, October 2009, Pages 2114-2120*

List of citations in CC-publications (listing from www.sciencedirect.com)
- for the publication 1)

1. **Ab initio calculation of the BCC Fe–Al–Mo (Iron–Aluminum–Molybdenum) phase diagram: Implications for the nature of the τ_2 phase**
Calphad, Volume 33, Issue 3, September 2009, Pages 576-583
Ney Sodr , Pablo Guillermo Gonzales-Orme o, Helena Maria Petrilli, Cl udio Geraldo Sch n
2. **Precipitation in ductile Fe–18Al–5Cr alloys with additions of Mo, W and C and effects on high-temperature strength**
Intermetallics, Volume 17, Issue 6, June 2009, Pages 404-413
D.G. Morris, M.A. Mu oz-Morris, I. Gutierrez-Urrutia, L.M. Requejo
- 3.) **Microstructure and mechanical properties of directionally solidified Fe–Al–Nb eutectic**
Intermetallics, Volume 16, Issue 10, October 2008, Pages 1212-1218
Srdjan Milenkovic, Martin Palm
- 4.) **High temperature creep behaviour of an FeAl intermetallic strengthened by nanoscale oxide particles**
International Journal of Plasticity, Volume 24, Issue 7, July 2008, Pages 1205-1223
D.G. Morris, I. Gutierrez-Urrutia, M.A. Mu oz-Morris
- 5.) **Design of martensitic/ferritic heat-resistant steels for application at 650  C with supporting thermodynamic modelling**
Materials Science and Engineering: A, Volume 477, Issues 1-2, 25 March 2008, Pages 334-343
V. Kne evi , J. Balun, G. Sauthoff, G. Inden, A. Schneider
- 6.) **In-situ precipitation of Al₂O₃ and κ -Fe₃AlC_{0.5} in iron aluminides through spark plasma sintering: Microstructures and mechanical properties**
Intermetallics, Volume 15, Issue 12, December 2007, Pages 1650-1658
M. Zadra, F. Casari, I. Lonardelli, G. Ischia, A. Molinari
- 7.) **Microstructure and mechanical properties of Fe₃Al-based alloys with strengthening boride precipitates**
Intermetallics, Volume 15, Issue 9, September 2007, Pages 1172-1182
R. Krein, A. Schneider, G. Sauthoff, G. Frommeyer
- 8.) **Strengthening at high temperatures by precipitates in Fe–Al–Nb alloys**
Intermetallics, Volume 14, Issues 10-11, October-November 2006, Pages 1204-1207
D.G. Morris, M.A. Mu oz-Morris, L.M. Requejo, C. Baudin
- 9.) **New iron–aluminium alloy with thermally stable coherent intermetallic nanoprecipitates for enhanced high-temperature creep strength**
Acta Materialia, Volume 54, Issue 9, May 2006, Pages 2335-2341
D.G. Morris, M.A. Mu oz-Morris, L.M. Requejo

- for the publication 2)

- 10.) **Effect of C, Ti, Zr and B alloying on fracture mechanisms in hot-rolled Fe–40 (at.%)Al**
Intermetallics, Volume 17, Issue 9, September 2009, Pages 680-687
P. Hau ild, J. Siegl, P. M lek, V.  ima

- 11.) **Precipitation in ductile Fe–18Al–5Cr alloys with additions of Mo, W and C and effects on high-temperature strength**
Intermetallics, Volume 17, Issue 6, June 2009, Pages 404-413
D.G. Morris, M.A. Muñoz-Morris, I. Gutierrez-Urrutia, L.M. Requejo
- 12.) **In-situ precipitation of Al₂O₃ and κ -Fe₃AlC_{0.5} in iron aluminides through spark plasma sintering: Microstructures and mechanical properties**
Intermetallics, Volume 15, Issue 12, December 2007, Pages 1650-1658
M. Zadra, F. Casari, I. Lonardelli, G. Ischia, A. Molinari
- 13.) **Microstructure and mechanical properties of Fe₃Al-based alloys with strengthening boride precipitates**
Intermetallics, Volume 15, Issue 9, September 2007, Pages 1172-1182
R. Krein, A. Schneider, G. Sauthoff, G. Frommeyer
- 14.) **Effect of composition on hydrogen permeation in Fe–Al alloys**
Intermetallics, Volume 15, Issue 1, January 2007, Pages 17-19
U. Prakash, N. Parvathavarthini, R.K. Dayal

- for the publication 3)

- 15.) **Effect of C, Ti, Zr and B alloying on fracture mechanisms in hot-rolled Fe–40 (at.%)Al**
Intermetallics, Volume 17, Issue 9, September 2009, Pages 680-687
P. Haušild, J. Siegl, P. Málek, V. Šíma
- 16.) **Precipitation in ductile Fe–18Al–5Cr alloys with additions of Mo, W and C and effects on high-temperature strength**
Intermetallics, Volume 17, Issue 6, June 2009, Pages 404-413
D.G. Morris, M.A. Muñoz-Morris, I. Gutierrez-Urrutia, L.M. Requejo
- 17.) **The influence of Cr and B additions on the mechanical properties and oxidation behaviour of L₂₁-ordered Fe–Al–Ti-based alloys at high temperatures**
Acta Materialia, Volume 56, Issue 10, June 2008, Pages 2400-2405
Ronny Krein, Martin Palm
- 18.) **Microstructure and mechanical properties of Fe₃Al-based alloys with strengthening boride precipitates**
Intermetallics, Volume 15, Issue 9, September 2007, Pages 1172-1182
R. Krein, A. Schneider, G. Sauthoff, G. Frommeyer
- 19.) **Microstructure and mechanical behaviour of a Fe–Ni–Al alloy**
Materials Science and Engineering: A, Volume 444, Issues 1-2, 25 January 2007, Pages 236-241
M.A. Muñoz-Morris, D.G. Morris

- for the publication 4)

- 20.) **Effect of C, Ti, Zr and B alloying on fracture mechanisms in hot-rolled Fe–40 (at.%)Al**
Intermetallics, Volume 17, Issue 9, September 2009, Pages 680-687
P. Haušild, J. Siegl, P. Málek, V. Šíma
- 21.) **Development of creep-resistant iron aluminides**
Materials Science and Engineering: A, Volume 462, Issues 1-2, 25 July 2007, Pages 45-52
D.G. Morris, M.A. Muñoz-Morris

- 22.) **Anelastic relaxation in ternary Fe–Al–Me alloys: Me Co, Cr, Ge, Mn, Nb, Si, Ta, Ti, Zr**
Materials Science and Engineering: A, Volume 442, Issues 1-2, 20 December 2006, Pages 92-98
 I.S. Golovin
- 23.) **New iron–aluminium alloy with thermally stable coherent intermetallic nanoprecipitates for enhanced high-temperature creep strength**
Acta Materialia, Volume 54, Issue 9, May 2006, Pages 2335-2341
 D.G. Morris, M.A. Muñoz-Morris, L.M. Requejo
- 24.) **Mechanical properties of Fe–Al–M–C (M=Ti, V, Nb, Ta) alloys with strengthening carbides and Laves phase**
Intermetallics, Volume 13, Issue 12, December 2005, Pages 1256-1262
 L. Falat, A. Schneider, G. Sauthoff, G. Frommeyer
- 25.) **Optimisation of precipitation for controlling recrystallisation of wrought Fe₃Al based alloys**
Intermetallics, Volume 13, Issue 12, December 2005, Pages 1296-1303
 S. Kobayashi, S. Zaefferer, A. Schneider, D. Raabe, G. Frommeyer
- 26.) **Orientation relationship between a ferritic matrix and κ -phase (Fe₃AlC_x) precipitates formed during metal dusting of Fe-15Al**
Intermetallics, Volume 13, Issue 12, December 2005, Pages 1332-1336
 A. Schneider, J. Zhang
- 27.) **Phase equilibria among α -Fe(Al, Cr, Ti), liquid and TiC and the formation of TiC in Fe₃Al based alloys**
Acta Materialia, Volume 53, Issue 14, August 2005, Pages 3961-3970
 Satoru Kobayashi, André Schneider, Stefan Zaefferer, Georg Frommeyer, Dierk Raabe
- 28.) **A study of precipitation in DO₃ ordered Fe–Al–Nb alloy**
Intermetallics, Volume 13, Issue 8, August 2005, Pages 862-871
 D.G. Morris, L.M. Requejo, M.A. Muñoz-Morris
- 29.) **The high-temperature strength of some Fe₃Al alloys**
Acta Materialia, Volume 52, Issue 9, 17 May 2004, Pages 2827-2836
 D. G. Morris, M. A. Muñoz-Morris, C. Baudin
- 30.) **Interfacial microstructure characterisation of molten Cu–Ti and an iron-based aluminide**
Journal of Alloys and Compounds, Volume 366, Issues 1-2, 10 March 2004, Pages 171-181
 M. Brochu, M. Pugh, R. A. L. Drew

Presentations on the conferences

1. **L. Falat**, A. Výrostková, J. Pecha, M. Svoboda: Mikroštruktúrne a creepové charakteristiky zvarových spojov progresívnych žiarupevných ocelí pre energetický priemysel. In: SEMDOK 2008 Žilina, University of Žilina, 2008, s. 85-88.
2. **L. Falat**, A. Výrostková, J. Pecha, M. Svoboda: Microstructure and creep behaviour of dissimilar ferritic/austenitic transition weld-joint with Ni-based filler metal. In: Kotle energetická zařízení a kogenerace: 17. ročník odborné konferencie s medzinárodnou účasťou, 17.-19. 03. 2008, Brno.

