

Curriculum Vitae

Ing. Karel Saksl, PhD.

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Personal Information

Name	Karel Saksl
Gender	male
Date of birth	May 27 th 1974
Place of birth	Košice, Slovakia
Family status	married, four children
Nationality	Slovak
Address	Atletická 22, 040 01 Košice, Slovak republic
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Work Experiences

Dates (from - to)	September 1997– current
Name and address of employer	Institute of Materials Research, Slovak Academy of Sciences, Watsonova 47, 043 53 Košice, Slovakia
Type of business or sector	scientific institution
Occupation or position held	postgraduate student, researcher, Senior Researcher
Main activities and responsibilities	involved in scientific project: Synthesis, characterization of nanostructured materials and their adaptation to engineering praxis
Dates (from - to)	April 2002– March 2007
Name and address of employer	HASYLAB at DESY, Notkestr.85, D-226 03 Hamburg, Germany
Type of business or sector	national user research facility
Occupation or position held	postdoc
Main activities and responsibilities	Structural studies of highly disordered (amorphous, nanocrystalline) materials at ambient and extreme conditions
Dates (from - to)	April - December 2001
Name and address of employer	Department of Physics, Technical University of Denmark, Building 309–307–312, DK-2800 Kongens Lyngby, Denmark
Type of business or sector	university
Occupation or position held	postdoc position
Main activities and responsibilities	involved in scientific project: Synthesis and characterization of amorphous, crystalline, quasicrystalline materials under non-ambient conditions

Education and Training

Date	14 th December 2000
Name and address of organization providing education and training	Institute of Materials Research, Slovak Academy of Sciences, Watsonova 47, 043 53 Košice, Slovakia
Principal subjects/occupational skills covered	defence of disertation thesis: " <i>Relationship between structural parameters and mechanical properties of Cu - MgO nanocrystalline system</i> "
Title of qualification awarded	PhD. (<i>Philosophiae Doctor</i> , lat.)
Dates (from - to)	September 1992 - June 1997
Name and address of organization providing education and training	Technical University of Košice, Faculty of Metallurgy, Letná 9, Blok A, 042 00 Košice, Slovakia
Principal subjects/occupational skills covered	Diploma work: " <i>Corosion characteristics of low alloyed steels</i> "
Title of qualification awarded	Ing. (<i>Ingénieur</i> , lat.)

Study Abroad

Dates (from - to)	September - December 2000
Name and address of organization providing education and training	MIC - Department of Micro and Nanotechnology, DTU - Building 345 East, DK-2800 Kongens Lyngby, Denmark
Principal subjects/occupational skills covered	Construction and measurement with electronic microdevices

Relevant Activities

Teaching / tutoring

2007 – current	Pawel Rikicki, PhD. - supervisor
2007 – current	Zdeněk Spotz, PhD. - supervisor
2007 – current	Lenka Fusová, PhD. - supervisor
2007 – current	Štefan Michalík, PhD. - consultant
2007 – current	Vladimír Kolesár, PhD. - consultant
2004 – 2007	Štefan Michalík, MSc. - supervisor
2004 – 2007	Vladimír Kolesár, MSc. - consultant
2004 – 2008	Robert Kanász, MSc. - consultant
2003 – 2006	supervisor in " <i>DESY summerstudent program</i> "

Participation on research projects

2008 – current	7.FP of EU PITN-GA-2008-211536, scientist in charge, " <i>Macro, Micro and Nano Aspects of Machining (MAMINA)</i> "
2001 – 2004	5.FP of EU G5RD-CT 2000 - 00341, " <i>High efficiency forming technology of light weight MMC components for automotive and household application</i> "
1997 – 1999	INCO-Copernicus CT- 96 0750, " <i>Formability modelling of aluminium base PM alloys</i> "
1997 – current	co-author of domestic research grant projects: VEGA, APVV

Invited talks

October 25, 2005 invited seminar talk at Institut für Physik, TU Chemnitz, "*Atomic structure of Al-based metallic glasses*"

Talks

October 12–14, 2005 ALUMINIUM 2005, "*Atomic Structure of $Al_{88}Y_7Fe_5$ Metallic Glass*"

Other activities

2004–2006 responsible (scientific support, advice) of three synchrotron beam-lines running at Hasylab.

2002–2006 adaptation of Paris-Edinburgh large volume pressure cell at Petra II beamlines, unique apparatus for in-situ XRD measurement at high pressures and high temperatures.

Personal Skills

Languages Slovak (native)
English (advanced), Czech (near-native), Russian (intermediate), German (intermediate)

Social skills and competencies leading skills, team work, communication skills, presentation skills

Computer skills familiar with many WindowsTM applications
familiar with scientific programs: Microcal OriginTM, Maple, PDFgetX2, RMCA, GSAS etc.
knowledge of programming languages: PASCAL, $\LaTeX$, IDL, HTML

Technical skills and competencies determination of structure and characterization structural transformations by means of X-ray powder diffraction (XRD) and X-ray absorption spectroscopy(XAS) techniques

investigation of thermal properties by means of differential scanning calorimetry (DSC) method

Modeling of highly disordered atomic structures by Reverse Monte Carlo (RMC) method

preparation of amorphous and nanocrystalline powders by mechanical milling

- [1] B. Nagler, U. Zastrau, R.R. Fäustlin, S.M Vinko, T. Whitcher, A.J. Nelson, R. Sobierajski, J. Krzywinski, J. Chalupsky, E. Abreu, S. Bajt, T. Bornath, T. Burian, H. Chapman, J. Cihelka, T. Döppner, S. Düsterer, T. Dzelzainis, M. Fajardo, E. Förster, C. Fortmann, E. Galtier, S.H. Glenzer, S. Göde, G. Gregori, V. Hajkova, P. Heimann, L. Juha, M. Jurek, F.Y. Khattak, A.R. Khorsand, D. Klinger, M. Kozlova, T. Laarmann, H.J. Lee, R.W. Lee, K.-H. Meiwes-Broer, P. Mercere, W.J. Murphy, A. Przystawik, R. Redmer, H. Reinholz, D. Riley, G. Röpke, F. Rosmej, **K. SaksI**, R. Schott, R. Thiele, J. Tiggesbäumker, S. Toleikis, T. Tschentscher, I. Uschmann, H.J. Vollmer, and J.S. Wark. Turning solid aluminium transparent by intense soft X-ray photoionization. *Nature Physics*, 5(9):693–696, 2009.
- [2] A.J. Nelson, S. Toleikis, H. Chapman, S. Bajt, J. Krzywinski, J. Chalupsky, L. Juha, J. Cihelka, V. Hajkova, L. Vysin, T. Burian, M. Kozlova, R.R. Fäustlin, B. Nagler, S.M. Vinko, T. Whitcher, T. Dzelzainis, O. Renner, **K. SaksI**, A.R. Khorsand, P.A. Heimann, R. Sobierajski, D. Klinger, M. Jurek, J. Pelka, B. Iwan, J. Andreasson, N. Timneanu, M. Fajardo, J.S. Wark, D. Riley, T. Tschentscher, J. Hajdu, and R.W. Lee. Soft x-ray free electron laser microfocus for exploring matter under extreme conditions. *Optics Express*, 17(20):18271–18278, 2009.
- [3] S. Michalik, **K. SaksI**, P. Sovák, K. Csach, and J.Z. Jiang. Crystallization of $Zr_{60}Fe_{20}Cu_{20}$ amorphous alloy. *Journal of Alloys and Compounds*, 478(1–2):441–446, 2009.
- [4] S. Couet, K. Schlage, **K. SaksI**, and R Rohlsberger. Morphology of the interfaces between transition metals and their native oxides: Role of interdiffusion processes. *Physical Review B*, 79:085417 1–6, 2009.
- [5] J. Bednarčík, **K. SaksI**, R. Nicula, S. Roth, and H. Franz. Influence of cryomilling on structure of CoFeZrB alloy. *Journal of Non-Crystalline Solids*, 351(47–51):5117–5119, 2008.
- [6] S. Couet, K. Schlage, **K. SaksI**, and R Rohlsberger. How metallic Fe controls the composition of its native oxide. *Physical Review Letters*, 101(5):056101, 2008.
- [7] **K. SaksI**, D. Vojtěch, and J. Ďurišin. In-situ XRD studies on Al-Ni and Al-Ni-Sr alloys prepared by rapid solidification. *Journal of Alloys and Compounds*, 464(1–2):95–100, 2008.
- [8] M. Orolínová, J. Ďurišin, K. Ďurišinová, M. Besterci, and **K. SaksI**. Structural analyses on AlSi₂₆Ni₈ rapidly solidified alloys. *High Temperature Materials and Processes*, 27(1):61–72, 2008.
- [9] R. Kanász, J. Bednarčík, **K. SaksI**, R. Nicula, M. Stir, and C. Lathe. In situ energy dispersive X-ray diffraction analysis of the temperature-pressure stability of Co-Fe-(Ta,W)-B alloys. *Acta Physica Polonica A*, 113(1):79–82, 2008.
- [10] P. Pouloupoulos, S. Baskoutas, L.F Kiss, L. Bujdosó, T. Kemény, F. Wilhelm, A. Rogalev, V. Kapaklis, C. Politis, M. Angelakeris, and **K. SaksI**. Magnetic moments of Fe and Y in the FeBY glass forming system. *Journal of Non-Crystalline Solids*, 354(2–9):587–591, 2008.
- [11] L Yang, J Z Jiang, **K. SaksI**, and H Franz. Origin of the pre-peak in $Zr_{70}Cu_{29}Pd_1$ metallic glass. *Journal of Physics: Condensed Matter*, 19(47):476217 (6pp), 2007.
- [12] L. Yang, S. Yin, X. D. Wang, Q. P. Cao, J. Z. Jiang, **K. SaksI**, and H. Franz. Atomic structure in $Zr_{70}Ni_{30}$ metallic glass. *Journal of Applied Physics*, 102(8):083512, 2007.
- [13] X. D. Wang, J. Bednarčík, **K. SaksI**, H. Franz, Q.P. Cao, and J.Z. Jiang. Tensile behavior of bulk metallic glasses by in situ x-ray diffraction. *Applied Physics Letters*, 91(8):081913 1–3, 2007.
- [14] P. Zetterström, R. Delaplane, Y. D. Wang, P. K. Liaw, H. Choo, **K. SaksI**, H. F. Zhang, and Y. Ren. Nanoscale defect clusters in metallic glasses. *J. Phys.: Condens. Matter*, 19(37):1–8, 2007.

- [15]P. Jívári, **K. SaksI**, N. Pryds, B. Lebech, N. Bailey, A. Mellergård, R. G. Delaplane, and H. Franz. Atomic structure of glassy $Mg_{60}Cu_{30}Y_{10}$. *Physical Review B*, 76(5):054208 1–8, 2007.
- [16]Q.K. Jiang, G.Q. Zhang, L. Yang, X.D. Wang, **K. SaksI**, H. Franz, R. Wunderlich, H. Fecht, and J.Z. Jiang. La-based bulk metallic glasses with critical diameter up to 30 mm. *Acta Materialia*, 55(13):4409–4418, 2007.
- [17]B. Yang, J. Jiang, Y. Zhuang, **K. SaksI**, and G. Chen. Crystallization of $Pd_{40}Cu_{30}Ni_{10}P_{20}$ bulk metallic glass with and without pressure. *Journal of University of Science and Technology Beijing: Mineral Metallurgy Materials (Eng Ed)*, 14(4):356–360, 2007.
- [18]X.D. Wang, L. Yang, J.Z. Jiang, **K. SaksI**, H. Franz, H. Fecht, Y.G. Liu, and H.S. Xian. Enhancement of plasticity in Zr-based bulk metallic glasses. *Journal of Materials Research*, 22(9):2454–2459, 2007.
- [19]A. B. Abrahamsen, J.-C. Grivel, N. H. Andersen, J. Homeyer, and **K. SaksI**. Kinetics of MgB_2 Formation Studied by in-situ Synchrotron X-Ray Powder Diffraction. *IEEE Transactions on Applied Superconductivity*, 17(2):2757 – 2760, 2007.
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- [30]**K. SaksI**, J. Ďurišin, M. Orolínová, K. Ďurišinová, and P. Lazár. Structural study on Al-26 mass% Si-8 mass% Ni powder. *Journal of Materials Science*, 40(8):1975–1978, 2005.
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- [39] J. Z. Jiang, B. Yang, **K. SaksI**, H. Franz, and N. Pryds. Crystallization of Cu₆₀Ti₂₀Zr₂₀ metallic glass with and without pressure. *Journal of Materials Research*, 18(4):895–898, 2003.
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SCIENTIFIC PAPERS IN PROCEEDINGS OF THE CONFERENCES

- [1] J. Cihelka, L. Juha, J. Chalupský, F.B. Rosmej, O. O. Renner, **K. SaksI**, V. Hájkov'a, L. Višín, E. Galtier, R. Schott, A.R. Khorsand, D. Riley, T. Dzelzainis, A.J. Nelson, R.W. Lee, P.A. Heimann, B. Nagler, S. Vinko, J. Wark, T. Whitcher, S. Toleikis, T. Tschentscher, R. Fäustlin, H. Wabnitz, S. Bajt, H. Chapman, J. Krzywinski, R. Sobierajski, D. Klinger, M. Jurek, J. Pelka, S. Hau-Riege, R.A. London, J. Kuba, N. Stojanovic, K. Sokolowski-Tinten, A.J. Gleeson, M. Störmer, J. Andreasson, J. Hajdu, B. Iwan, and N. Timneanu. Optical emission spectroscopy of various materials irradiated by soft x-ray free-electron laser. *Proceedings of SPIE - The International Society for Optical Engineering*, 7361, 2009.
- [2] J. Bednarčík, R. Nicula, **K. SaksI**, M. Stir, and E. Burkel. Microstructure evolution during thermal processing: Insight from in-situ time-resolved synchrotron radiation experiments. *Materials Science Forum*, 550:607–612, 2008.

- [3] A.B. Abrahamsen, J.-C. Grivel, N.H. Andersen, M. Herrmann, W. Hasler, B. Birajdar, O. Eibl, and **K. SaksI**. In-situ synchrotron x-ray study of MgB₂ formation when doped by SiC. *Journal of Physics: Conference Series*, 97(1):012315, 2008.
- [4] J.-C. Grivel A.B. Abrahamsen, N.H. Andersen, and **K. SaksI**. Manufacture of (Bi,Pb)₂Sr₂Ca₂Cu₃O₁₀-based tapes with a composite sheath. *Journal of Physics: Conference Series*, 97(1):012033, 2008.
- [5] X. Ou, W. Roseker, **K. SaksI**, H. Franz, L. Gerward, X. Xu, G. Q. Zhang, and L. N. Wang. Microstructure and crystallization in Cu₅₀Zr₄₅Al₅ metallic glass. In *Proceedings of the International Symposium on Metastable Mechanically Alloyed and Nanocrystalline Materials*, volume 441, pages 185–188. Journal of Alloys and Compounds, Paris, France, 2007.
- [6] J. Bednarčík, R. Nicula, **K. SaksI**, M. Stir, and E. Burkel. Microstructure Evolution During Thermal Processing : Insight from In-Situ Time-Resolved Synchrotron Radiation Experiments. In *Proceedings of the International Symposium held to coincide with the retirement of Professor John Humphreys in Manchester, UK, September 2006*, volume 550, pages 607– 612. Materials Science Forum, Trans Tech Publications, Switzerland, 2007.
- [7] D. Vojtěch, J. Verner, B. BártoVá, and **K. SaksI**. Thermal Stability of Rapidly Solidified Alloys of Aluminium with Transition Metals. In *Proceedings of the 10th International Conference on Aluminum Alloys, Materials Science Forum*, volume 519–521, pages 389–395. Materials Science Forum, Vancouver, Canada, 2006.
- [8] D. Vojtěch, J. Verner, B. BártoVá, and **K. SaksI**. Microstructure and Properties of Rapidly Solidified Al–TMs Alloys. In *Proceedings of the EURO PM2005*, volume II, pages 205–210. EPMA, Prague, 2005.
- [9] D. Vojtěch, J. Verner, B. BártoVá, and **K. SaksI**. Microstructural features of rapidly solidified Al–TM (transition metals) based alloys. In H. Danninger Ľ. Parilák, editor, *Proceedings of the Int. Conf. DF PM 2005: Deformation and Fracture in structural PM materials*, pages 91–99. Institute of Materials Research of the Slovak Academy of Sciences in Košice, Stará Lesná, 2005.
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- [12] D. Vojtěch, J. Verner, B. BártoVá, and **K. SaksI**. Vlastnosti rychle ztuhlých slitin Al–Mn a Al–Mn–Sr. In *Proceedings of the METAL 2005*, page 82. Tanger, Hradec nad Moravicí, 2005.
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HASYLAB AND ESRF REPORTS

- [1] **K. SaksI**, D. Zajac, H. Franz, Š. Michalík, and J. Z. Jiang. Comparisons Between XAFS Signals Measured in Transmission and Total Electron Yield Mode. In *HASYLAB Annual Report 2006*, volume I. HASYLAB at DESY, Hamburg, 2006.
- [2] S. Couet, T. Diederich, R. Röhlberger, E. Welter, **K. SaksI**, and O. Seeck. X-ray Absorption and reflectivity studies of Iron/native oxide multilayers. In *HASYLAB Annual Report 2006*, volume I. HASYLAB at DESY, Hamburg, 2006.
- [3] C. Paulmann, R. Peters, **K. SaksI**, K. Petermann, and U. Bismayer. Characterisation of disorder-induced scattering in $\text{NaGd}(\text{WO}_4)_2\text{:Yb}^{3+}$ crystals. In *HASYLAB Annual Report 2006*, volume I. HASYLAB at DESY, Hamburg, 2006.
- [4] J. Bednarčík, **K. SaksI**, R. Nicula, and E. Burkel. Influence of cryomilling on structure of CoFeZrB alloy. In *HASYLAB Annual Report 2006*, volume I. HASYLAB at DESY, Hamburg, 2006.
- [5] D. Oleksaková, J. Fuzer, J. Bednarčík, and **K. SaksI**. The influence of mechanical milling and alloying on structure of NiFe alloys. In *HASYLAB Annual Report 2006*, volume I. HASYLAB at DESY, Hamburg, 2006.
- [6] **K. SaksI**, A. Ehnes, H. Franz, Š. Michalík, and V. Kolesár. Multi-channel collimator, a tool for high-pressure angular-dispersive XRD experiments. In *HASYLAB Annual Report 2005*, volume I, pages 46–53. HASYLAB at DESY, Hamburg, 2005.
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- [8] **K. SaksI**, H. Franz, and J. Z. Jiang. Structural study of $\text{Zr}_{70}\text{Ni}_{29}\text{Pd}_1$ amorphous alloy. In *HASYLAB Annual Report 2004*, volume I. HASYLAB at DESY, Hamburg, 2004.
- [9] G. Wellenreuther, T. Asthalter, H. Franz, I. Sergueev, U. van Buerck, **K. SaksI**, and A. Chumakov. Dynamics of a glass-forming binary liquid confined in mesoporous silicon. In *ESRF Report 2004*. ESRF, Grenoble, 2004.
- [10] **K. SaksI**, P. Jónvári, H. Franz, and J. Z. Jiang. Structural study of bulk amorphous NdNiAl. In *HASYLAB Annual Report 2003*, volume I. HASYLAB at DESY, Hamburg, 2003.
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