



RNDr. Frantisek Kovac, CSc.

Head of department of microstructural
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contact

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CURRICULUM, EDUCATION

- 1970-75: Student, UPJS Kosice, Fakulty of Science, department of experimental physic
- 1975-76: University of Pavol Jozef Šafarik, Košice, Physic Department – lecture assistant.
- 1977-83: Institute of Materials Research, Košice, Post graduate course.
- 1983: Technical University Košice, PhD in Material Sciences.
- 1983-96: IMR SAS Košice, scientific worker
- 1988-1991: external scientific consultant of STRATCOR company, USA
- 1996-up to now: senior scientific worker

LINGUISTIC SKILLS

Slovak, English, German, Russian

SCIENTIFIC ACTIVITIES

- theory of microstructure development during thermo and thermo-mechanical treatments of steel, mechanism of grain boundary motion, thermo and strain induced grain growth and its kinetic
- interaction of grain boundaries with secondary phase particles, phases and solute elements
- recovery processes, dynamic and static recovery, recrystallization during hot-rolling and after cold-rolling treatments, selective grain growth, development of crystallographic texture.
- plastometric simulation of thermo-mechanical processes, analyzes of strain-deformation relationships from substructural changes point of view
- development of microstructural and textural multilayered steels
- materials area: low carbon, construction, deep-drawing, electrotechnical, multifunctional and AHSS steels.

TEACHING ACTIVITIES

- 1986 – 88: Technical University Košice, lecture assistant. (steel testing)
- 1997 – up to now: Supervisor for PhD courses in specialization 39-03-9 “Materials engineering and critical state of materials”.
- Referee of solid states physic subject for PhD courses in specialization “Materials engineering

and critical state of materials” at IMR SAS.

- Referee of solid states physic subject for PhD courses in specialization “Physical metallurgy” at TU Kosice.
- Committee-man of scientific PhD examining board in specialization 5.2.41 „Physical Metallurgy“ at Faculty of Metallurgy, TU Kosice.

PROJECTS (COORDINATOR)

- 1989-1991: Supervisor of industrial project for STRATCOR Pittsburgh, USA „Controlled rolling of steels containing dispersed nitride phases“
- 1991-1993: IMR SAS, supervisor of grant GAV # 2/999 330/91 A, „Microstructural engineering in low carbon steels“
- 1993: ZFW Dresden-IMR SAS, supervisor of international project, „Gefuge und Texturentwicklung in Elektroblechen“
- 1994-1996: supervisor of grant GAV # 1107/94, „ Selective grain growth and microstructure development in grain-oriented steels“.
- 1998-200: supervisor of grant VEGA # 2/5165/98, „Secondary Recrystallization and Microstructure Design of Electrotechnical Steels”.
- 2001-2003: supervisor of grant VEGA # 2/1063/21, „Precipitation and Restoring Processes Interaction During Recrystallization Annealing“.
- 2004-2006 supervisor of grant VEGA # 2/4175/24, “Microstructural design of columnar structures with cubic texture in isotropic electrical steels”
- 2006- supervisor of grant APVV # 51-024405, „Development of unconventional microstructure in isotropic electrotechnical steels“.
- 2006 – grant # SK-CN-01506, in frame of Chinese Slovakian collaboration
- 2006 – grant APVV / LPP-0174-06, „ Deformation induced grain boundary motion in electrotechnical steels,,
- 2007 – grant VEGA 2/7195/27, „ Deformation and diffusion induced grain boundary motion during development of cubic and Goss crystallographic orientations in Fe-Si ferite,,
- 2010 – grant VEGA: 2/0138/10 "Microstructure dizaj in progressive isotropic electroctechical steels."
- 2010 – grant in frame of Structural Founds of Europe Union program: OPVaV-2008/2.2/01-SORO (Transfer to praxes the knowledge and technology obtained by research and development). „Technology of preparation of electrotechnical steels possessing high permeability for high affectivity electromotors.”

Collaboration with industry

- Supervisor for circa 45 projects within collaboration with USS Košice, Vítkovice, ZŤS Zvolen, Škoda Plzeň, Embraco Slovakia. The projects were aimed on the development of new materials and new production technology

STAYS ABROAD

- 1979: CNIICHERMET Moscow, training course “Analysis of recrystallization processes in steels”.
- 1983-1993: ZFW Dresden, 9 training courses /4-6 weeks/ “Plastometric simulation of deformation processes”.
- 1991: IMR Stockholm, “Investigation of deformation induced grain growth in structural steels”.
- 1995: VŠB Ostrava, “Analysis of microstructure development during hot rolling”.
- 1990-1993: VÚ Vítkovice, 3 training courses “Model real rolling processes by torsion plasrometer”.
- 2006 – Institute of Materials, Shanghai University, China, development of cubic texture, /1 month/

MEMBERSHIPS, AWARDS

- 1986 : „Award of Czechoslovak and German Academy of Sciences“.
- Member of Croatian Society for Materials and Tribology
- Member of Scientists Council in IMR SAS.
- Scientific results „Steels with gradient microstructure.“ were awarded as one of the three best works at SAS in are of technical sciences in 2005.
- Committee-man of VEGA #.5
- Member of editorial board for “Metallic Materials“

NUMBER OF PUBLICATIONS: 180, there from 70 journal articles,
5 patents.

NUMBER OF CITATIONS: 112

SELECTED PUBLICATIONS

- KOVÁČ, F. - DŽUBINSKÝ, M. - BOŘUTA, J.: Prediction of Low Carbon Steels Behaviour under Hot Rolling Service Conditions. Acta Materialia, 51, 2003, s.1801-1808.
- KOVÁČ, F. - DŽUBINSKÝ, M. - SIDOR, J.: Columnar Grain Growth in Non-Oriented Electrical Steels. Journal of Magnetism and Magnetic Materials, 269, 2004, s.333-340.
- KOVÁČ, F. - DŽUBINSKÝ, M. - SIDOR, J. - PREDMERSKÝ, M.: Columnar Grain Growth in Non-Oriented Electrical Steels. 21st Annual Conference on Properties and Application of Magnetic Materials. Chicago, 13.-15.5.2002. Chicago : Illinois Inst.Technology 2002.
- KOVÁČ, F. - DŽUBINSKÝ, M. - SIDOR, J.: Kinetics of Columnar Grain Growth Assisted by Decarburising Annealing in Non-Oriented Electrical Steels.. Soft Magnetic Materials 16. Düsseldorf, 9.-12.9.2003.
- DŽUBINSKÝ, M. - KOVÁČ, F. - PETERČÁKOVÁ, A.: New Form of Equation for Deformation Resistance Prediction under Hot Rolling Service Condition. Scripta Materialia, 47, 2002, 2, s.119-124.
- SIDOR, J. - KOVÁČ, F.: Microstructural Aspects of Grain Growth Kinetics in Non-Oriented Electrical Steels. Materials Characterization, 55, 2005, s.1-11.
- SIDOR, J. - KOVÁČ, F. – KVACKAJ, T.: Grain growth phenomena and heat transport in non-oriented electrical steels. Acta Materialia 55 (2007) 1711–1722.
- KOVÁČ, F. - STOYKA, V. - PETRYSHYNETS, I.: Strain-Induced Grain Growth in Non-Oriented Electrical Steels. Journal of Magnetism and Magnetic Materials, 320, 2008, s.e627-e630.