

DEPARTMENT OF ELECTROTECHNOLOGY

<http://www.elf.stuba.sk/Katedry/KETG/>

Head of Department

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I. STAFF

Associate Professors	Doc. Ing. Anna Grusková, PhD., Doc. Ing. Jaroslav Lelák, PhD., Doc. Ing. Vladimír Šály, PhD.
Assistant Professors	Ing. Miroslav Kopča, PhD., Ing. Soňa Milovská, PhD., Ing. Juraj Packa, PhD.
Senior Scientists	Ing. Vladimír Ďurman, PhD., Ing. Michal Ružinský, PhD.
Technical Staff	Anna Ferenčíková (secretary), Marián Kamendy
PhD. Students	Ing. Tomáš Ďuriš, RNDr. Darina Kevická, Ing. Mária Papánová, Ing. Michal Váry, Ing. Slávka Vícenová,

II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Photovoltaic Laboratory
- High Voltage Laboratory
- Laboratory of Cables and Wires
- Laboratory of Health Protection at Work
- Laboratory of Dielectric Properties of Materials
- Laboratory of Electrical Components
- Laboratory of Liquid Dielectrics
- Laboratory of Electrochemistry
- Laboratory of Magnetic Materials

II.2 Special Measuring Instruments and Computers

- 300 W Solar Simulator for Photovoltaics
- System for Measuring of Complex Impedance
- Vibration Magnetometer PVM-1
- Equipments for combined ageing tests of insulating systems

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of lecturer

Safety and Protection of Health at Work I	(1st sem., 1-2h)	M.Kopča, V.Šály, J.Packa
Materials for Electrical Engineering	(3rd sem., 2-3h)	V.Šály
Safety and Protection of Health at Work II	(4th sem., 1-4h)	M.Kopča, V.Šály
Electrochemistry	(5th sem., 2-2h)	A.Grusková

Renewable Energy Sources	(5th sem., 2-2h)	M.Ružinský
Materials and Processing	(6th sem., 2-2h)	V.Šály
Diagnostic Methods in Electrotechnology	(6th sem., 2-3h)	V.Đurman
Manufacturing Processes	(6th sem., 2-2h)	V.Šály
High Voltage Systems	(7th sem., 2-2h)	J.Lelák
Metallic and Optical Cables	(8th sem., 2-2h)	J.Lelák

III.2 Graduate Study (Ing.)

Technology of Electronic Devices	(1st sem., 2-2h)	M.Kopča
Technology of Electric Machines	(2nd sem., 2-2h)	J.Lelák
Technology of Magnetism and Ceramics	(2nd sem., 2-2h)	A.Grusková

III.3 Undergraduate Study (Bc. Distance Education Method)

Safety and Protection of Health at Work I	(1st sem.)	M.Kopča
Materials for Electrical Engineering	(3rd sem.)	J.Lelák

IV. RESEARCH PROJECTS

- Photovoltaic Renewable Energy Sources - Solar Cells, Modules and Systems. G 1/0164/03, M.Ružinský
- Diagnostics and Degradation Degree Determination of Electrical Insulation and Insulation Systems. G 1/0167/03, J. Lelák
- New Diagnostic Methods for PVC Cables Status Detection. AV/803/2002, J. Lelák
- Research of Magnetic Materials, Recording Media and Transport of Bioactive Materials. G1/0163/03, J.Sláma, A. Grusková
- Multimedia Study Materials for the Bachelor Study at the FEI STU. KEGA, M. Huba, M. Kopča
- Unconventional Multi-Phase Nanostructural Materials with Extraordinary Physical Properties. APVT-51-052702. P. Švec (SAS), V. Đurman
- Research of the Materials Based on Inclusive Compounds and Their Using. M. Reháková, V. Šály

International Scientific Projects:

- Project in Sixth Framework Programme of European Union FP6: Upgrading Semiconductor Silicon Wafers to Manufacture Cheap Solar Cells. M. Ružinský
- Project in Fifth Framework Programme of European Union: Preparation and Research of Doped Ionic Conductor LiNbO_3 for Electrochrom Element or Electrolytes for Lithium-ionic Microbatteries. V.Šály, Slovak-Greek cooperation.
- Fabrication of Novel Transparent and Conductive Oxide with Enhanced Properties for Electronic and Photovoltaic Applications. M.Ružinský, Slovak-Greece Project.
- Research of Magnetic Materials Based on Iron Oxides with the Aim of Applications in Electronic and Recording Systems. VT – Cooperation Slovak/Czech, A. Grusková, J. Sláma
- Characterization of Properties of Hexagonal Ferrites. Bilateral Slovak/Mexican Project, J. Sláma, A. Grusková

V. COOPERATION

V.1 Cooperation in Slovakia

- VÚJE j.s.c., Trnava
- CERAM j.s.c., Nové Sady
- Kablo Bratislava
- VUKI j.s.c., Bratislava
- SE a.s. OZ EBO, Jaslovské Bohunice
- Galantaterm, s.r.o., Galanta
- OBO Bettermann Slovakia, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- VUSAPL, Nitra
- THERMO-SOLAR p.l.c., Žiar n. Hronom
- ELBA a.s. Kremnica
- BEZ a.s. Bratislava
- TAU-CHEM Ltd, Bratislava
- All Deco s.r.o. Jaslovské Bohunice
- Sylex s.r.o. Bratislava
- Institute of Materials Research, Slovak Academy of Sciences, Košice
- Elektroservis a.s. Bratislava
- SONY Slovakia, Trnava Plant
- UPJŠ Košice

V.2 International Cooperation

- Technical University, Brno, CzR
- Czech Technical University, Prague, CzR
- ABB Corporate Research, Baden Daettwil, Switzerland
- Institute of Anorganic Chemistry, Academy of Sciences, Řež, CzR
- Piezoceramics, p.l.c. Hradec Králové, CzR
- Motorpal, a.s. Světlá Hora, CzR
- PROTECH Group, s.r.o., Klatovy, CzR
- TECNATOM, s.a., Madrid, Spain
- IMEC Leuven, Belgium
- Fraunhofer Institute for Solar Energy Systems ISE, Freiburg, Germany
- Università degli Studi di Firenze, Italy
- EC JCR Ispira, Italy
- SEI - Sistemi Energetici Integrati Prato, Italy
- BP Solar Frederick, MD, USA and BP Solar, Vienna, Austria
- Solartec, p.l.c., Rožnov pod Radhoštěm, CzR
- WAGO Electric GmbH., Vienna, Austria
- Foundation for Research and Technology, MRG-IESL, Heraklion, Crete, Greece
- WSC – World Solar Challenge, Adelaide, Australia
- Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland
- Foundation for the Development of Material Science, Cracow University of Technology, Cracow, Poland
- National Renewable Energy Laboratory, Golden, CO and Washington, DC, USA
- WREN - World Renewable Energy Network, Reading, UK
- CINVESTAV, Saltillo, Mexico
- Aristotle University, Thessaloniki, Greece
- U.S.DOE/American Solar Challenge/Formula Sun, Washington, DC, USA
- TECHNOFI, Sophia-Antipolis, France

V.3 Membership in International Organizations and Societies

- M.Ružinský: WREN - World Renewable Energy Council Network, UK (Affiliated to UNESCO)
- M.Ružinský: Senior Member, IEEE - EDS (Electron Devices Society), USA
- A.Grusková: member of International Steering Committee EMFM
- A.Grusková: member of European Physical Society

V.4 Contracts

- Lelák J., Packa J., Váry M., Beláň A., Kamendy M.: Measurement of magnetical losses of fittings for overhead transmission lines. Contract with ELBA a.s. Kremnica
- Lelák J., Packa J., Váry M.: Measurement of electrical properties of distribution transformers. Contract with BEZ a.s. Bratislava
- Lelák J. at all. : Combined ageing test of epoxy systems. Contract with ABB Corporate Research, Baden Daettwil, Switzerland
- Lelák J. at all: Measurement of electrical properties cable deposits from NPP. Contract with VUJE a.s. Trnava
- Lelák J., Packa J., : Electrical tests of high precision piezoceramic discs. Contract with Piezoceram s.r.o. Libřice, Czech republic.

VI. THESES

VI.1 Masters Theses

Masters theses supervised at the Department of Electrotechnology. The names of supervisors are in brackets.

- [1] Z. Halász: Influence of Zn-Ti substitutions on magnetic and electric properties of Li ferrites. (A. Grusková)
- [2] M. Čápek: Comparison of the load carrying capacity of runway cables. (J. Lelák)

VI.2 Doctoral Theses

- [1] D. Kevická: Influence of technology on properties of substituted barium ferrites. (A.Grusková)
- [2] M. Papánová: Study of evaluations of magnetic and structural properties of ferrites. (A.Grusková)

VII. OTHER ACTIVITIES

- members of International Steering Committee for „World Renewable Energy Congress IX“ (M. Ružinský, V. Šály)
- activities in: Renewable Energy World, Review Issue 2004-2005, Directory of Suppliers, James&James Science Publishers Ltd, London, UK (M. Ružinský)
- activities in Czech-Slovak section CS-IEEE (M. Ružinský)
- collaboration with IEEE-EDS Photovoltaic Devices Technical Committee and EDS Administrative Committee (AdCom), USA (M. Ružinský)
- participation on Panasonic World Solar Challenge 2005, Across Australia, 25 Sept. – 2 Oct. 2005, as VIP/Official Observer (M. Ružinský)
- invited lecture „Photovoltaic Renewable energy R&D, Education and Training at the SUT“, ARC Photovoltaic Centre of Excellence / UNSW Sydney, Australia, September 2005 (M.Ružinský)
- active participation in Maria Curie Programme at the University of Technology Cracow, Poland (T. Ďuriš)

- member of Local Organising and Programme Committee of the 17th Int. Conf. of Soft Magnetic Materials, 2005, Bratislava (A. Grusková)

VIII. PUBLICATIONS

VIII.1 Journals

- [1] ĎURMAN, V., LELÁK, J.: Conversion of Dielectric Data from the Time Domain to the Frequency Domain. In: Advances in Electrical and Electronic Engineering. - Vol.4, No.2 (2005) - pp. 71-74. (in English)
- [2] GONZÁLEZ-ANGELES, A., MENDOZA-SUÁREZ, G., GRUSKOVÁ, A., LIPKA, J., PAPÁNOVÁ, M., SLÁMA, J.: Effect of (Ni, Zn) Ru Mixtures on Magnetic Properties of Barium Hexaferrites Yielded by High-Energy Milling. In: Journal of Magnetism and Magnetic Materials. - Vol.285 (2005) - pp. 450-455. (in English)
- [3] GONZÁLEZ-ANGELES, A., MENDOZA-SUÁREZ, G., GRUSKOVÁ, A., SLÁMA, J., LIPKA, J., PAPÁNOVÁ, M.: Magnetic Structure of $\text{Sn}^{2+}\text{Ru}^{4+}$ -Substituted Barium Hexaferrites Prepared by Mechanical Alloying. In: Materials Letters. - Vol.59 (2005) - pp. 1815-1819. (in English)
- [4] GONZÁLEZ-ANGELES, A., MENDOZA-SUÁREZ, G., GRUSKOVÁ, A., PAPÁNOVÁ, M., SLÁMA, J.: Magnetic Studies of Zn-Ti-Substituted Barium Hexaferrites Prepared by Mechanical Milling. In: Materials Letters. - Vol.59 (2005) - pp. 26-31. (in English)
- [5] HARSÁNYI, Z., JANÍČEK, F., LELÁK, J., MURÍN, J.: Compensator of Thermal Flow. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, No.6 (2005) - p. 44. (in Slovak)
- [6] KOPČA, M.: Environmental Policy of the European Union in the Field of Electrical Engineering. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, No.2 (2005) - pp. 25-26. (in Slovak)
- [7] KOPČA, M.: Recollection of Ing. Jozef Psotka. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, No.1 (2005) - p. 39. (in Slovak)
- [8] KOPČA, M.: Recollection of Ing. Jozef Psotka. In: Spektrum. - Vol.11, No.5 (2005) - pp. 7-8. (in Slovak)
- [9] KUČERA, M., KUČERA, S., CHUPÁČ, M., ŠÁLY, V.: Ecological Energy Source for Personal Hybrid Electrical Car of Category M1. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, No.3 (2005) - pp. 7-9. (in Slovak)
- [10] RUŽINSKÝ, M.: Lady Drive in Solar Cars. In: Dámska jazda. - Vol.9, No.1 (2005) - p. 68. (in Slovak)
- [11] RUŽINSKÝ, M.: Solar Cars 2005. In: Stop. - Vol.35, No.25-26 (2005) - pp. 72-73. (in Slovak)
- [12] RUŽINSKÝ, M.: Solar Powered Cars. In: BMW revue. - Vol.8, No.1 (2005) - pp. 48-51. (in Czech)
- [13] RUŽINSKÝ, M., ŠÁLY, V.: Solar Houses and Automobiles. In: TZB Haustechnik. - Vol.13, No.4 (2005) - pp. 26-30. (in Slovak)

- [14] SLÁMA, J., GRUSKOVÁ, A., PAPÁNOVÁ, M., KEVICKÁ, D., JANČÁRIK, V., DOSOUDIL, R., MENDOZA-SUÁREZ, G., GONZÁLEZ-ANGELES, A.: Properties of M-Type Barium Ferrite Doped by Selected Ions. In: Journal of Electrical Engineering. - Vol.56, No.1-2 (2005) - pp. 21-25. (in English)
- [15] SLÁMA, J., OLAH, V., GRUSKOVÁ, A.: Microelectromagnetic Media for Mechatronic Systems. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, Special Issue (2005) - pp. 63-66. (in Slovak)
- [16] ŠÁLY, V., RUŽINSKÝ, M.: Photovoltaic at the Beginning of Third Millenium and SR. In: EE - časopis pre elektrotechniku a energetiku. - Vol.11, No.2 (2005) - pp. 17-20. (in Slovak)

VIII.2 Conferences

- [1] DOBROVOLSKA, T., ĎURIŠ, T., KOLODZIEJ, A.: Structural and Optical Properties of Electrodeposited Ag-Se Coatings. In: 29th International Conference of International Microelectronics and Packaging Society. Poland Chapter : Koszalin, Poland, 18.-21.9.2005. pp. 307-310. (in English)
- [2] DOSOUDIL, R., UŠÁKOVÁ, M., FRANEK, J., SLÁMA, J., OLAH, V., GRUSKOVÁ, A.: RF Electromagnetic Wave Absorbing Properties of Ferrite Polymer Composite Materials. In: Soft Magnetic Materials Conference : Bratislava, Slovak Republic, 7.-9.9.2005. p. 182. (in English)
- [3] DOSOUDIL, R., UŠÁKOVÁ, M., UŠÁK, E., GRUSKOVÁ, A., SLÁMA, J., JANČÁRIK, V.: Magnetic Properties of Be or Cu Substituted Ni-Zn Ferrites. In: Soft Magnetic Materials Conference : Bratislava, Slovak Republic, 7.-9.9.2005. p. 183. (in English)
- [4] ĎURIŠ, T., KOLODZIEJ, A., KREWNIAK, P., PITUCHA, M., ŠÁLY, V.: The Automatical Computation and Evaluation of the Solar Cell Parameters. In: 29th International Conference of International Microelectronics and Packaging Society. Poland Chapter : Koszalin, Poland, 18.-21.9.2005. pp. 155-158. (in English)
- [5] ĎURMAN, V., LELÁK, J.: Additional Polarisation Losses in High Voltage Insulating Systems Influenced by Ageing. In: 3rd International Scientific Symposium "Elektroenergetika 2005" : Stará Lesná, Slovak Republic, 21.-23.9.2005. (in English)
- [6] ĎURMAN, V., LELÁK, J., PACKA, J.: Modelling of Interfacial Polarisation in Electroinsulating Systems. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 17-20. (in English)
- [7] ĎURMAN, V., LELÁK, J., PACKA, J., VÁRY, M.: Diagnostics of PVC Cables Condition by Very Low Frequency Measurements. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 21-24. (in English)
- [8] GRUSKOVÁ, A., ĎURMAN, V., UŠÁKOVÁ, M., GONZÁLEZ, A., SLÁMA, J., ŠTOFKA, M.: Magnetic and Dielectric Properties of $Ba_{1-x}Sr_xFe_{12}O_{19}$ Hexagonal Ferrites. In: Soft Magnetic Materials Conference : Bratislava, Slovak Republic, 7.-9.9.2005. p. 185. (in English)
- [9] GRUSKOVÁ, A., JANČÁRIK, V., SLÁMA, J., DOSOUDIL, R.: Effect of Zn-Ti Substitution on Electromagnetic Properties of Li Ferrites. In: Soft Magnetic Materials Conference : Bratislava, Slovak Republic, 7.-9.9.2005. p. 184. (in English)
- [10] GRUSKOVÁ, A., LIPKA, J., SLÁMA, J., JANČÁRIK, V., PAPÁNOVÁ, M., GONZÁLES, A.: Magnetocrystalline Properties of $BaFe_{12-2x}M_xSn_xO_{19}$ (M=Zn, Sn, Ni) Nano-Sized Particles.

In: International Conference on the Applications of the Mössbauer Effect : Montpellier, France, 5.-9.9.2005. p. T8-P51. (in English)

- [11] GRUSKOVÁ, A., PAPÁNOVÁ, M., KEVICKÁ, D., SLÁMA, J., DOSOUDIL, R., GONZÁLEZ-ANGELES, A., CORRAL-HUACÚZ, J.C., MENDOZA-SUÁREZ, G.: Microstructure and Magnetic Properties of $BaFe_{12-2x}M_xZi_xO_{19}$ (M=Zn, Co) Ferrites Prepared by Modified Methods. In: 9th International Conference on Ferrites - ICF 9 : San Francisco, USA, 2004. pp. 39-44. (in English)
- [12] KOPČA, M., VÁRY, M., KOZÍK, T., DOSOUDIL, R.: Thermal Ageing of the Plastic Ferrite Foils with PVC Matrix. In: 11th International Workshop on Applied Physics and Condensed Matter : Malá Lučivná, Slovak Republic, 15.-17.6.2005. pp. 29-33. (in English)
- [13] LELÁK, J., BELÁŇ, A., ĎURMAN, V., PACKA, J., VÁRY, M.: Measurement of Magnetic Losses of Fittings for Overhead Transmission Lines. In: 3rd International Scientific Symposium "Elektroenergetika 2005" : Stará Lesná, Slovak Republic, 21.-23.9.2005. (in English)
- [14] LELÁK, J., BELÁŇ, A., PACKA, J., VÁRY, M.: Method for Measurement of Magnetic Losses in HV Lines Fittings. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 157-160. (in Slovak)
- [15] KOPČA, M., VÁRY, M., MILOVSKÁ, S., KOZÍK, T., DOSOUDIL, R.: Evaluation of Long-Term Stability of the Plastic Ferrite Composite Foils Using the Accelerated Thermal Ageing Method. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 314-318. (in English)
- [16] PIETRUSZKO, S., FARA, L., FARA, S., VITANOV, P., REHÁK, J., BARINKA, R., MELIKOV, E., PÁLFY, M., SHIPKOV, P., KROTKUS, A., ŠÁLY, V., NEMAC, F., NOWAK, S., PROTOGEROPOULOS, CH., FECHNER, H.: Recommendations for PV Development in the European Union New Member and Candidate States. In: 20th European Photovoltaic Solar Energy Conference : Barcelona, Spain, 6.-10.6.2005. pp. 2886-2889. (in English)
- [17] SLÁMA, J., JANČÁRIK, V., GRUSKOVÁ, A., MYDLA, M.: Method of Determination of Electromagnetic Parameters of Ferricomposites. In: 7th International Conference on Advanced Methods in the Theory of Electrical Engineering. Applied to Power Systems : Pilsen, Czech Republic, 12.-14.9.2005. pp. D75-D80. (in English)
- [18] ŠÁLY, V., ĎURIŠ, T., RUŽINSKÝ, M.: Electrical Measurements for the Evaluation of PV Cells and Modules Materials. In: 11th International Workshop on Applied Physics and Condensed Matter : Malá Lučivná, Slovak Republic, 15.-17.6.2005. pp. 110-114. (in English)
- [19] ŠÁLY, V., PACKA, J., RUŽINSKÝ, M., ĎURIŠ, T., BAŘINKA, R.: Electrical Properties of the PV Module Encapsulant. In: 20th European Photovoltaic Solar Energy Conference : Barcelona, Spain, 6.-10.6.2005. pp. 2372-2375. (in English)
- [20] ŠÁLY, V., RUŽINSKÝ, M., PACKA, J.: Measurement of Electrical Properties of Structures for Solar Cells. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 395-398. (in English)
- [21] ŠIMKOVIČ, E., VOJTEK, M., LELÁK, J.: Measuring System for Qualitative Assessment of Discharge Activity in Electrical Insulation. In: International Conference "Diagnostics '05" : Nečtiny, Czech Republic, 6.-8.9.2005. pp. 83-86. (in Slovak)

- [22] VÁRY, M., LELÁK, J.: Influence of Ageing Dielectric Properties of Cables With PVC Based Insulation in Wide Temperature. In: 7th Conference for PhD Students ELITECH 2005 : Bratislava, Slovak Republic, 9.2.2005. pp. 106-108. (in English)

VIII.3 Book

- [1] PIETRUSZKO, S., VITANOV, P., REHÁK, J., MELIKOV, E., PALFY, M., SHIPKOV, P., KROTKUS, A., FARA, L., ŠÁLY, V., NEMAC, F., NOWAK, S., PROTOGEROPOULOS, CH., FECHNER, H.: Status of Photovoltaics 2004 and Recommendations. - Warsaw: European Commission, 2005. - 72 pp. (in English)

VIII.4 Textbook

- [1] BOJNA, I., KOPČA, M.: Safety of Electrical Installations. Laboratory Exercises. - Bratislava: FEI STU, 2005. - 57 pp. (in Slovak)