CURRICULUM VITAE

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Research ID: G-5790-2014

Education and professional

1995 Master of Science in Physical Electronics, Faculty of Nuclear Sciences and Physical Engineering, the Czech Technical University in Prague

2000 PhD in Physical engineering at the Czech Technical University in Prague. Thesis: Pulsed Laser Deposition (PLD) of the Thin Optical Films

Awards: 2006 award of Ota Wichterle`s for young scientists

Summary of employment:

Institute of Physics v. v. i., AS CR, Na Slovance 2, 182 21 Prague 8, Czech Republic

- **since 2011 – *head of Department analyses of functional materials (SAFMAT)***
- 2005 – senior researcher
- since 1993 –Institute of Physics AS CR (Diploma and Ph.D. exp. works)

International Stays

- 2007 – research stay at ENEA Frascati, Italy (3 months) *"Growth of Si-nanowires and Si-nanotube by CVD"*
- 2002-2004 Marie-Curie Individual fellowship MCFI-2001-00740 at LPCML-CNRS University Claude Bernard Lyon1, France
- 2001 post-doc stay (7 months) in ENEA Frascati. Italy *"Deposition and characterisation of tin oxides and silicon carbide films prepared by CVD and laser assisted CVD techniques"*
- 2000 post-doc stages stay in ENEA in Frascati. *"Deposition (L-CVD) and characterisation (XPS) of tin oxides films for gas sensors"*
- 1997 stay at LOSCM in Marseille, France, *"Waveguiding measurement of thin films for planar waveguides laser"* (6 months).

Experiences: fabrication of thin films by physical vapour deposition techniques, in-situ monitoring of the deposition process and thin film growth, characterisation of thin films structures by wide range of techniques

Significant completed grant projects

Since 2016 acquired more than 10 million Euro on research grants and contract research projects especially from Ministry of education young and sports (MEYS), Grant agency of Czech Republic (GACR) and Technological agency of Czech Republic (TACR):

- ***Investigator and co-investigator of 7 GAČR projects***: 106/01/D017 and 106/07/0949 both *evaluation- excellent;* GAČR P108/11/1312, GA ČR P108/11/0958, GAČR 16-22092S *Fluoride nanostructural thin films with outstanding optical and luminescence properties* and GAČR 13-30397S *Novel materials for magneto-optical applications ,* 17-13427S "*Detection mechanisms on chemiresistors with a sensitive layer based on nanostructured oxides"*, Projects of GA AV KJB1010417 and A100100729
- HP MF-CT-2001-01492 ***Individual grant Marie-Curie category 30:*** *"Structural and Optical Properties of Nanostructured Optical Waveguides Elaborated by PLD"* 2002- 2004
- Program Nanotechnology for society KAN 400100653 2006-2010 *"Selforganised magnetic nanostructutres"* investigator; *evaluation- excellent*

- Investigator and scientific manager of projects Operational Program Prague – Competitiveness: CZ.2.16/3.1.00/22132 „ *Centre for analyses of functional materials "SAFMAT* 2009-2011 and - CZ.2.16/3.1.00/21568 *Functional Materials for bio-aplications* –FUNBIO 2013-2014
- LM2011029 and LM2015088 (MEYS)*"Large infrastructure SAFMAT"* 2012-19 investigator
- TAČR TA03010490 *Precision multifunctional coatings in vacuum and microwaves devices, 2013-16, co-investigator*
- National Sustainability Program I (MEYS), *"Centre for materials analysis*" LO1409 (2015-2019)- investigator
- Operational programme Research, development and education MEYS, *Centre of Analyses of Functional Materials*, CZ.02.1.01/0.0/0.0/16_013/0001406 (2017-2020)- investigator.
- FV20350 (MPO) *"Chemiresistors Based on Nanocomposite Layers for Gas Detection,* 2016-2021 co-investigator

Current grant project:

- GAČR 19-13310S "*Topological excited electronic states in ferromagnets*"; co-investigator 2019-22
- GAČR 20-21069S "*Giant enhancement of Faraday rotation by combining magnetic nad plasmonic functionalities in fluoride films"*investigator 2020-22
- GAČR 21-09277S *"MXenes: plasmon-assisted surface modification and properties tuning"* 2021-23 co-investigator
- FW01010279 TAČR program Trend: *"Lithographic ultrasonic arrays from smart materials for Industry 4.0"* 2020-25, co-investigator
- SOLID21-CZ.02.1.01/0.0/0.0/16_019/0000760 Operational programme Research, development and education MEYS, (2018-2023) responsible for research activity *Metallic thin films and Heusler alloys*

Research activities in last 5 years:

The research activities are focused on the **deposition of thin films by Physical Vapour Deposition (PVD) techniques** and their characterisation with attention to the elaboration of nanocrystalline and nanocomposite structures. In the last years my work was focused on the fabrication of thin films of different kind of materials:

- The activities were focused on the detail study defects and impurities in thin films fabricated by pulsed laser ablation and magnetron sputtering
- ***Fabrication of thin metallic films, Heusler alloys thin films, noble metal ultrathin films and metals nanoparticles formation***
- Fabrication and characterisation of 2D materials
- Fabrication of metal-oxides films Lu_2O_3, Y_2O_3, SnO_2 etc., Fabrication of rare earth doped fluoride CaF_2, LaF_3 films by electron beam evaporation for fluorescence applications
- Magnetic thin films nanostrustures Co, Fe, FeCo inside dielectric matrices

Other scientific activities:

- development of new hybrid UHV deposition systems, combination of the deposition techniques and processes such as laser ablation, laser annealing, magnetron sputtering, plasma jet, r.f. discharges and electron beam evaporations
- development of new laboratories for characterization of functional materials (EPR, XPS, AFM, ellipsometry, SEM)
- in-situ characterisation of plasma – mass spectroscopy and optical emission spectroscopy, Langmuir probe
- analyses of thin films surface and interfaces by NanoESCA instruments XPS, LEED, PEEM, XPS, UPS and k-space ARPES measurements

Teaching activities:

- lectures for graduate and PhD students modern methods in physics CTU in Prague
- supervisor of 3 PhD student projects

Publication: Number of papers in international journals: 172
Number of citation/excluding autocitation (WoS): 1494/1239
H-index (WoS) : 21
Number of patents: 4