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Address: Str. Rozmarinului No.7, 400426, Cluj Napoca, Romania (Home) |

Address: Babeș-Bolyai University, Faculty of Physics, Room 235, Department of Solid State Physics and Advanced Technology, Kogălniceanu 1 St., 400347, CLuj Napoca, Romania (Work)

WORK EXPERIENCE

26/09/2021 – CURRENT Cluj-Napoca, Romania

UNIVERSITY PROFESSOR FACULTY OF PHYSICS, BABES-BOLYAI UNIVERSITY

Department of Solid State Physics and Advanced Technology

Research axes

- Research and development of spintronic devices with tailored magneto-transport properties.
- Mezomagnetism and spin polarized transport in low dimensional systems.
- Electronic properties of low dimensional systems. Modelling of magnetism and electronic transport.
- Multiscale modelling, design of materials and devices for information storage and manipulation technologies.
- Artificial intelligence, neuromorphic, probabilistic and quantum computing technologies.

Project Coordinator:

- ID PN-III-P4-ID-PCE-2020-0230,No. UEFISCDI PCE 4/04.01.2021, *Multiscale modelling and design of skyrmionics materials and storage, synaptic and qubit spintronic devices with enhanced energetic efficiency* (MODESKY).

Teaching activities:

- *Master degree level*: Advanced materials, micro and nanotechnologies, Electronic transport phenomena in solids, Solid State Electronics, Physics of Thin Films, Physics of Metals and Alloys, Magnetic and Superconducting Materials.
- *Post-universitty level*: Introduction in quantum optics and quantum mechanics, within the Quantum Computing and Communication programme.

Membership

- Member of the National Council for the Certification of Academic Titles, Diplomas and Certificates (CNADTCU) the Mathematics and Natural Sciences panel , Physics section (06/2016-09/2018), (06/2020-2024).
- Member of the National Council of Scientific Research (CNCS), (06/2020-2024).
- Expert evaluator for the European Commission (since 08/2023).

17/04/2016 – CURRENT Cluj-Napoca, Romania

UNIVERSITY PROFESSOR -ASSOCIATED TO THE DOCTORAL SCHOOL BABES BOLYAI UNIVERSITY

Doctoral school of Physics

- Coordination of PhD theses
- Teaching activities: Methodology of Scientific Research (course modules)

09/2013 – 26/09/2021 Cluj Napoca, Romania

UNIVERSITY PROFESSOR TECHNICAL UNIVERSITY OF CLUJ-NAPOCA, FACULTY MATERIALS AND ENVIRONMENTAL ENGINEERING, ROMANIA.

Department of Physics

Research axes

- Research and development of spintronic devices with tailored magneto-transport properties.
- Mezomagnetism and spin polarized transport in low dimensional systems.
- Electronic properties of low dimensional systems. Modelling of magnetism and electronic transport.
- Multiscale modelling, design of materials and devices for information storage and manipulation technologies.
- Artificial intelligence, neuromorphic, probabilistic and quantum computing technologies.

Project Coordinator:

- ID PN-III-P4-ID-PCE-2020-0230,No. UEFISCDI PCE 4/04.01.2021, *Multiscale modelling and design of skyrmionics materials and storage, synaptic and qubit spintronic devices with enhanced energetic efficiency* (MODESKY)
- ID PN-III-P4-ID-PCE-2016-0143, No. UEFISCDI 22/12.07.2017, *Emerging sensors and data storage spintronic devices based on magnetic tunnel junctions with enhanced efficiency magnetization manipulation* (EMERSPIN)
- ID PN-II-PCE-2012-4-0315, No. UEFISCDI:23/29.08.2013, *Mezoscopic spintronic devices with tailored magnetotransport properties (SPINTAIL)*.
- POS CCE Project: ID. 574, cod SMIS-CSNR 12467, Sectorial Operational Programme "Increase of Economic Competitiveness" Priority axis 2 – Research, Technological Development and Innovation for Competitiveness; Operation 2.1.2: „*Complex research projects fostering the participation of high-level international experts*" .

Teaching activities:

- *Elementary Physics*, *Advanced Physics* for students (license/bachelor level), Technical University of Cluj-Napoca, Romania.
- Master degree level: *Advanced materials, micro and nanotechnologies*, *Electronic transport phenomena in solids, Solid State Electronics*, Babeș Bolyai University Cluj-Napoca, Romania.
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Membership

- Member of the National Council for the Certification of Academic Titles, Diplomas and Certificates (CNADTCU) the Mathematics and Natural Sciences panel , Physics section (06/2016-09/2018), (06/2020-2024)
- Member of the National Council of Scientific Research (CNCS), (06/2020-2024)
- Member of the Senate of the Technical University of Cluj-Napoca (TUCN), Romania, member in the Research Senate Commission of TUCN
- Member in the Faculty of Materials Science and Engineering TUCN and Department of Physics and Chemistry councils (2014-2020).

08/2010 – 09/2013 Cluj Napoca, Romania

SENIOR RESEARCHER TECHNICAL UNIVERSITY OF CLUJ-NAPOCA, FACULTY MATERIALS AND ENVIRONMENTAL ENGINEERING, ROMANIA

Centre of Superconductivity, Spintronics and Surface Science

Project Coordinator: POS CCE Project: ID. 574, cod SMIS-CSNR 12467 Sectorial Operational Programme "Increase of Economic Competitiveness" Priority axis 2 – Research, Technological Development and Innovation for Competitiveness; Operation 2.1.2: „*Complex research projects fostering the participation of high-level international experts*" .

- Implementation in TUCN of a new research axis: *Nanomagnetism and Spintronics*.
- Functionalizing of research facilities of C4S (TUCN) for micro and nano-pattering of electronic devices.
- Development of new research axis: Spintronics, mezomagnetism and spin polarized transport in low dimensional systems.
- Electronic properties of low dimensional systems. Modelling of magnetism and electronic transport.

Teaching activities:

- Master degree level: *Advanced materials, micro and nanotechnologies*, Faculty of Material Science and Engineering, Technical University of Cluj-Napoca, Romania.

Membership

- Member of the National Council for the Certification of Academic Titles, Diplomas and Certificates (CNADTCU) the Engineering Science panel , Materials Engineering and Nanotechnology section (until 07/09/2012).

08/2005 – CURRENT Nancy, France

SENIOR RESEARCHER (CHARGÉ DE RECHERCHES 1ERE CLASSE-CNRS) NATIONAL CENTER OF SCIENTIFIC RESEARCH (CNRS), FRANCE, UNIVERSITÉ HENRI POINCARÉ NANCY

Institut Jean-Lamour (Laboratoire de Physique des Matériaux)
Member of *Nanomagnetism and Spintronics* team.

Research topics:

- Experiment and theory in solid state physics of low dimensional systems: surfaces, interfaces, thin films.
- Spin and symmetry polarized electronic transport.
- Micromagnetism and magnetic interactions.
- Electronic structure of low dimensional systems. Modelling of electronic transport in solid state devices.

Teaching activities:

- Ecole Normale Supérieure de Mines de Nancy, Institute National Polytechnique Lorraine, "Interaction rayonnement matière" - Quantum mechanics and applications.
- Henri-Poincare University, teaching activities concerning General Physics within the post-university CAPE modules (CAPES =Certificate of aptitude for secondary school teachers).

Membership

- Scientific expert in the *French Ministry of Research General Direction for Research and Innovation* (DGRI).
- Evaluator for ANR, NSF, ... projects.

Project Coordinator:

- Coordinator and member of PI team of French National Research Agency (ANR) and France-Spain collaboration projects.
- Advisor and/or co-advisor of 7 PHD theses, member/referee of 11 PHD/ Habilitation defenses..
- Coordination of research studies for Licence and Master Diploma at the Henri-Poincare University, Nancy.

08/2001 – 08/2005 Nancy, France

RESEARCH STAFF (CHARGÉ DE RECHERCHES 2EME CLASSE-CNRS) NATIONAL CENTER OF SCIENTIFIC RESEARCH (CNRS), FRANCE UNIVERSITÉ HENRI POINCARÉ NANCY

Institut Jean-Lamour (Laboratoire de Physique des Matériaux)
Member of *Nanomagnetism and spintronic* team

Research topics

- Experimental and theory in solid state physics of low dimensional systems: surfaces, interfaces, thin films.
- Molecular beam epitaxy, sputtering, UV-lithography, clean-room expertise.
- Spin polarized electronic transport.
- Micromagnetism and magnetic interactions.
- Ab-initio calculations of the electronic structure of low dimensional systems

Research projects/coordination of research activities:

- Member of PI team of EC project *BLUEBERRIES*' Projet MEDEA+ (*Building-up Embedded Memories*) -see the section Research Projects.
- Coordination of 2 PhD thesis as co-advisor (temporary habilitation provided by the Henri-Poincare University and National Polytechnic Institute of Lorraine).
- Coordination of research studies for Licence and Master Diploma at the Henri-Poincare University, Nancy.

08/2000 – 08/2001

POSTDOCTORAL RESEARCHER LOUIS PASTEUR UNIVERSITY STRASBOURG - FRANCE/ OXFORD UNIVERSITY - UNITED KINGDOM

Clarendon Laboratory Oxford- Institut de Physique et Chimie des Matériaux Strasbourg

Member of PI team of EC project '*NanoMEM*' IST – 1999 – 13471: '*Developement of a new generation of nonvolatile random access magnetic memory based on magnetic tunnel junction elements*'.

Research activities developed jointly in

- *Clarendon Laboratory, Oxford*, UK (group of Prof. J. F. Gregg)
- & *Institut de Physique et Chimie des Matériaux, Strasbourg*, France

Research topics

- Design, elaboration and characterizations of innovative spintronic devices (spin-transistors), magnetism and spin polarized electronic transport modelling.

08/1997 – 08/2000 Strasbourg, France

PHD RESEARCHER LOUIS PASTEUR UNIVERSITY- STRASBOURG, INSTITUTE OF PHYSICS AND CHEMISTRY OF MATERIALS STRASBOURG

Institute of Physics and Chemistry of Materials Strasbourg -SIEMENS Erlangen Germany

Spin polarized transport in magnetic tunnel junctions. Correlation of micromagnetism and electronic transport properties. Applications to auto-motive sensors.

Member in PI team of EC project European Project '*TUNNELSENSE'* Brite Euram E 97-4961.

Research activities developed within a joint PhD framework between:

- *Institut de Physique et Chimie des Matériaux, Strasbourg*, France
- SIEMENS Erlangen Research laboratories, Germany.

1995 – 1996 Cluj Napoca, Romania

RESEARCH ASSISTANT NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR ISOTOPIC AND MOLECULAR TECHNOLOGIES (INCDTIM)

Research topics

- Electronic properties of surfaces, metallic catalysts, electronic structure of low-dimensional systems by *ab-initio* techniques.
- Computational Physics, Analytical and numerical simulations in solid state physics.

EDUCATION AND TRAINING

2012 France

UNIVERSITY PROFESSOR QUALIFICATION 15/02/2013 QUALIFICATION N°: 13128190583- VALIDITY 31/12/2017 National Council of Universities France, the 28th section: Condensed Matter and Materials

Physics, Condensed Matter, Material Science
15/02/2013 Qualification N°: 13128190583- Validity 31 December 2017

2007 France

UNIVERSITY PROFESSOR QUALIFICATION 15/02/2018 QUALIFICATION N°: 08128190583- VALIDITY 31/12/2012 National Council of Universities France, the 28th section: Condensed Matter and Materials

Physics, Condensed Matter, Material Science
15/02/2008 Qualification N°: 08128190583 - Validity 31 December 2012

2005 Nancy, France

HABILITATION DIPLOMA / « HABILITATION À DIRIGER LES RECHERCHES » Henri-Poincaré University, Nancy, France -recognized by Education Ministry order (2011)

Equilibrium and out-of-equilibrium electronic properties in magnetic thin film multilayer systems: spintronics of magnetic tunneling devices
Thin film elaboration by MBE and sputtering, structural, magnetic and morphological characterization (RHEED, AFM, MFM, AGFM, SQUID, VSM), tunneling transport experiments, theoretical modeling of magnetism and spin polarized transport, electronic structure calculations by ab-initio techniques

1997 – 2000 Strasbourg, France

PHD IN PHYSICS, EUROPEAN LABEL, SUMMA CUM LAUDE Louis Pasteur University Strasbourg, France Institute of Materials Physics and Chemistry, IPCMS Str

Magnetism and spin polarized transport in Magnetic tunnel junctions: The use of tunnel transport as a micromagnetic probe

Thin film deposition techniques (sputtering, Molecular Beam Epitaxy)
Optical lithography
Atomic/magnetic force microscopy, magnetometry (AGFM, SQUID, VSM), transport spectroscopy

1995 – 1996 Strasbourg, France
DIPLÔME D'ÉTUDES APPROFONDIES (MASTER IN PHYSICS) Louis Pasteur University Strasbourg, France/ Institute of Materials Physics and Chemistry, IPCMS

Solid state physics and condensed matter
Theoretical modelling, *ab-initio* band structure calculations: *Influence de l'azote sur le magnétisme du Cr(001) par TB-LMTO*

1990 – 1995 Cluj Napoca, Romania
PHYSICIST ENGINEER DIPLOMA (TECHNOLOGICAL PHYSICS) Babes Bolyai University, Faculty of Physics

Research activity for the **dissertation diploma** developed at the National Center of Research and Development for Isotopic and Molecular Technologies (INCDTIM), Cluj Napoca, Romania
Computer simulation of XANES fine structures of supported metal catalysts
Analytical modelling and numerical simulation

1990 Baia de Aries, Romania
BACCALAUREAT Industrial High-School

Mining electrician qualification

LANGUAGE SKILLS

Mother tongue(s): **ROMANIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
FRENCH	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Microsoft Excel | Microsoft Word | Power Point | Google Drive | Social Media | Zoom | Google Docs

ADDITIONAL INFORMATION

DRIVING LICENCE

Driving Licence: B

ORGANISATIONAL SKILLS

Organisational skills Leadership, acquired through:

- Coordination of research teams / groups (doctoral theses, postdoctoral research internships, master's degree, bachelor's degree).
- Coordination of several research projects with one or more partners both national (France, Romania) and European
- Coordination of international inter-academic collaboration projects and ERASMUS+ mobility frameworks
- Coordination as a foreign expert of high international level of a project funded by the European Commission involving a research and management team of 10 people.
- Through international collaboration as an expert, co-supervision of doctoral theses and direct coordination of research projects, I implemented a new research direction within the Center for

Superconductivity, Spintronics and Surface Science, Technical University of Cluj Napoca: *Nanomagnetism and Spintronics*.

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills Good communication skills gained via:

- active participation in over 100 conferences and colloquia, over 20 lessons and invited speakers.
- didactic and pedagogical experience (courses, seminars, doctoral management and research internships).
- coordination of research groups and auxiliary technical staff.

JOB-RELATED SKILLS

Job-related skills

- Expert in elaboration and characterization techniques of simple and complex small dimensional systems (thin films, multilayer systems, micro and nano devices).
- Ultra-high vacuum (UHV) techniques (Molecular Beam Epitaxy, sputtering).
- Magnetic and micromagnetic characterization techniques: AGFM, VSM, SQUID magnetometry, Kerr effect electrical and magneto-electric characterization in variable magnetic field and temperature.
- Specific techniques for analyzing surfaces and interfaces: Atomic / Magnetic Force Microscopy (AFM / MFM), Tunnel Microscopy (STM), Electron Diffraction (RHEED / LEED), Auger Spectroscopy (AES), Transmission Electron Microscopy (TEM) and scanning (SEM).
- Artificial intelligence, neuromorphic, probabilistic and quantum computing technologies.
- Clean room techniques, micro- and nano-structuring (various types of lithography, wet and dry etching).
- Long-term experience in analytical and numerical modeling of physical phenomena, the ability to perform complex correlated analyzes: experiment-theory or by combining several experimental investigative techniques.
- Teaching experience acquired through teaching and research coordination activities at bachelor's, master's, doctoral, post-doctoral level.
- Experience in participating in doctoral juries, habilitation, dissertations.
- Experience in participating in committees for organizing colloquia, conferences, workshops.
- Ability to work in a team, to set up simple scientific collaboration or partnership projects by identifying and exploiting complementarity.
- Ability to lead research and development projects.
- Ability to popularize and disseminate scientific results.
- Experience in participating in specialized commissions, review and expertise:
    - Scientific expert in the French Ministry of Research, Directorate General for Research and Innovation (DGRI).
    - Foreign expert within CNATDCU (Romania), Engineering Sciences panel, Nanotechnologies and Physics commissions.
    - Expertise of ANCS (Romania), ANR (France), NSF (USA), international projects.
    - Expert evaluator for EC commission (since 08/2013).
    - Frequent reviewer of several high-level specialized ISI journals (Nature group, Physical Review group -Letters, B, Applied- Review, Applied Physics Letters, Journal of applied Physics, Journ. of. Magn. and. Magn. Matt. ...).

INVITED PROFESSOR AT UNIVERSITIES FROM TOP 500 SHANGHAI RANKING

INVITED PROFESSOR AT UNIVERSITIES FROM TOP 500 SHANGHAI RANKING

07/2015 (1 month) *Strasbourg University* – France (87 ranking/Physics);
07/2017 (1 month) *Lorraine University*, Nancy– France (201-300 ranking 2017)
08/2018 (1 month) *Lorraine University* Nancy– France (201-300 ranking 2017)

DISTINCTIONS/AWARDS

DISTINCTIONS/AWARDS

12/2014 *Excellence Award* of the Technical University Cluj-Napoca, Romania, rewarding the top scientific results obtained in 2013
12/2012 Prix *"Constantin Miculescu"* **of the ROMANIAN ACADEMY**
2008-2011 French national award for scientific excellence (PES)

2006 – ***BRONZE MEDAL of the National Centre of Scientific Research*** (CNRS- France) for the researches in the field of Spintronics https://www.cnrs.fr/fr/personne/coriolan-viorel-tiusan
11/2004 *Grand Prix pour la Recherche* of the Eastern Industrial Society, France, rewarding the technological research team of the Henri Poincaré University, Nancy, France.
11/2007 *Grand Prix pour la Recherche* of the Eastern Industrial Society, France, rewarding the nanomagnetism and spintronics team of the Henri-Poincaré University, Nancy, France

REFERENCES

REFERENCES

Prof. Albert FERT
Nobel Prize in Physics 2007
Paris-Sud University
Member of the French Academy of Science, Scientific Director of the Unité Mixte de Physique CNRS/Thales, Orsay, France
albert.fert@thalesgroup.com

Prof. John F. GREGG
Fellow and Tutor in Physics, Oxford University,
Vice-President of the Magdalen College Oxford
j.gregg1@physics.ox.ac.uk

SR. Shinji YUASA
Director of the Spintronics research Center
National Institute of Advanced Industrial Science and Technology (AIST)
Umezono, Tsukuba, Ibaraki 305-8568, Japan
yuasa-s@aist.go.jp

Prof. Vladislav KORENIVSKI
Professor Nanostructure Physics
Director Albanova Nanolab
Royal Institute of Technology | KTH-Applied Physics
AlbaNova universitetscentrum, 10691 Stockholm, Sweden
vk@kth.se

Prof. Alain SCHUHL
University of Grenoble, France,
Deputy CEO for Science @*CNRS* , France
alain.schuhl@cnrs-dir.fr

Prof. Mairbeck CHSHIEV
Head of Theory Group at SPINTEC Grenoble, Director of ESONN
Univ. Grenoble Alpes, CEA, CNRS, IRIG/Spintec, Grenoble, France
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Faculty of Science,
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MAGNETRANS-UAM group leader
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BIBLIOMETRIC REFFERENCES

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Scopus Author ID: 6701567041 (h=30)
ISI Web of Science **Web of Science ResearcherID** ABB-4399-2021 (h=30)
Google Scholar (h=33)

ORCHID: https://orcid.org/0000-0003-1338-3867