Mihai S. GABOR

Date of birth: 12/01/1982 | **Nationality:** Romanian

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ORCID: 0000-0003-0888-0762 | **RID**: B-8070-2012 | **Scopus Author ID:** 57188785992

Work address:
Physics and Chemistry Departament,Technical University of Cluj-Napoca, Str. Memorandumului No. 28 RO-400114 Cluj-Napoca, Romania.

WORK EXPERIENCE

2009 – PRESENT

Assistant Professor, Lecturer, Associate Professor

Department of Physics and Chemistry, Faculty of Materials and Environmental Engineering, Technical University of Cluj-Napoca, Str. Memorandumului No. 28 RO-400114 Cluj-Napoca, Romania. Description: teaching and research activities, supervising graduate and postgraduate student research activities. In charge of the spintronics and spin-orbitronics research direction of the Center for Superconductivity Spintronics and Surface Science (C4S) from TUCN (https://c4s.utcluj.ro/spintronics.html).

EDUCATION AND TRAINING

2011

Ph.D. in Physics and Materials Engineering

Joint Thesis, Awarded by the "Henri Poincare" University (Physics), Nancy, France and the Technical University of Cluj-Napoca (Materials Engineering), Romania; Thesis title: "Spintronics with alternative materials: full-Heusler alloys and dilute magnetic oxides"

2007

M.Sc. in Solid State Physics

Awarded by "Babeș-Bolyai" University, Cluj-Napoca, Romania

2006

M.Sc. in Materials and Nanostructures Physics

Awarded by "Joseph Fourier", University, Grenoble, France

2005

B.Sc. in Physics

Awarded by "Babeș-Bolyai" University, Cluj-Napoca, Romania

RESEARCH INTERNSHIPS AND TRAINING COURSES

2005-2011

Research internships for approx. 24 months

(1) - ENEA, Frascati, Rome, Italy (research internship - Pulsed Laser Deposition of oxide multilayers, low temperature magnetic and magneto-transport measurements); (2) - CEA-SPINTEC, Grenoble, France (master internship – numerical modeling of exchange bias in nanostructures); (3) -LPM, University "Henri Poincaré" Nancy, France (doctoral thesis research internships – growth of thin films and heterostructures by molecular beam epitaxy, magneto-electrical characterizations, numerical methods).

Training courses

(1) - Bruker AXS, Karlsruhe, Germany (High Resolution and Powder X-ray diffraction, Stress and texture). (2) - UJF-INPG, Grenoble, France, Experimental methods for nanotechnologies. (3) - Sumer schools: European School of Magnetism ESM 2007, Cluj-Napoca; European School of Magnetism ESM 2009, Timisoara, Romania.

PERSONAL SKILLS

Language skills

Mother tongue(s): **Romanian**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
English	B2	B2	B2	B2	B2
French	B2	B2	B2	B2	B2

Communication skills

Good communication skills in both Romanian and English gained through my teaching experience, participation in national and European research projects and participation at international conferences and workshops.

Management skills

Good management skills gained by managing four research projects as director.

Research skills

Thin films and thin films heterostructures growth: DC/RF magnetron sputtering, pulsed laser ablation (PLD), molecular beam epitaxy (MBE). **Materials characterization:** Structural properties (X-ray diffraction techniques); Morphological properties of thin films (AFM, X-ray reflectometry), Magnetic static (MFM, VSM, SQUID) and dynamic (FMR) properties, Magneto-electric (R(H,T)) and magneto-optic (MOKE) characterizations. **UV lithography and related processes:** UV lithography mask design, UV lithography of thin films. Automation of electrical measurement processes using LabVIEW. Analytical and numerical methods for modelling magnetism and transport in spintronic structures. Micromagnetic simulations.

Digital skills

LabView visual programming language and Python, C/C++ programming in Linux/Windows, Micromagnetic Simulations in MuMax3, numeric/symbolic calculations in Matlab. Design using Autodesk Fusion 360. LaTeX and Microsoft Office™.

ADDITIONAL INFORMATION

Research interests

Spintronic and spin-orbitronic materials and devices; Chiral magnetic domain-wall and skyrmion logic devices.

Research projects director

1. (2025-2028) - PN-IV-P1-PCE-2023-1548 - nr. 15PCE/2025 – Gate-voltage controlled chiral magnetic domain wall spinorbitronic devices (STRIVE), Financing organization MRI-UEFISCDI, Val. 240.000 Euro.
2. (2021-2024) - PN-III-P4-ID-PCE - nr. 182/2021 - Spin-orbit torque driven field-free artificial synapses and neurons (SPINSYNE), Financing organization MRI-UEFISCDI, Val. 250.000 Euro. https://c4s.utcluj.ro/SPINSYNE/spinsyne.html
3. (2018-2020) - PN-III-P1-1.1-TE nr. 24/02.05.2018 -Spin-orbitronic devices for non-volatile magnetic memories, Financing

organization MRI-UEFISCDI, Val. 100.000 Euro. https://c4s.utcluj.ro/SOTMEM/sotmem.html

4. (2015-2017) - PN-II-RU-TE nr. 255/01.10.2015 - Advanced spintronic devices for communication and data storage technologies based on Heusler compounds, Financing organization MRI-UEFISCDI, Val. 125.000 Euro. https://c4s.utcluj.ro/SPINCOD/spincod.html
5. (2014-2015) - TUCN - Research grant, TE-29317/2014 - Advanced materials with applications for spintronic devices for information storage technologies, Financing organization TUCN, Val. 7000 Euro.
6. (2008) EURATOM-ENEA, Rome, Italy Research fellowship (3 months) - Growth and characterization of magnetic multilayers structures, Val. 3000 Euro.

Publications

▪ Articles: 97, Web of Science RID: B-8070-2012, number of citations: 1712, **h-index: 23**; SCOPUS Author ID: 57188785992, number of citations: 1783, **h-index: 24**; Google Scholar, number of citations: 2236, **h-index: 27**.

▪ Patents: M. Năsui, T. Petrișor Jr, R.B. Moș, A. Mesaroș, M. S. Gabor, L. Ciontea, T. Petrișor, Chemical method for obtaining epitaxial films of lanthanum manganite doped with strontium - patent no. RO 131325 B1; M. Năsui, R.B. Sonher, M.S. Gabor, L. Ciontea, A. Mesaroș, Chemical process for obtaining thin films with spinel structure of $GaFe_2O_4$ - patent application no. A2024/00540.

▪ Textbooks: Physics I, M.S. Gabor UTPRESS (2025); Physics II, M.S. Gabor UTPRESS (2025).

▪ Books: Micro and nanotechnologies - Thin film fabrication and characterization techniques for applications in microelectronics, C. Tiușan, T. Petrișor Jr., M. Gabor UTPRESS (2013); Quantum mechanics through applications, C. Tiușan, M. Gabor, T. Petrișor Jr. UTPRESS (2013);

▪ Book chapter: Characterization of Complex Spintronic and Superconducting Structures by Atomic Force Microscopy Techniques, L. Ciontea, M. S. Gabor, T. Petrișor Jr., T. Ristoiu, C. Tiușan, T. Petrișor in Scanning Probe Microscopy – Physical Property Characterization at Nanoscale, InTech Europe, Croatia, (2012).

Invited lectures

Thin 11th International Conference On Physics Of Advanced Materials (ICPAM-11) 8-14 September 2016, Cluj-Napoca, Romania; 15-17 June 2017 Spin Currents and Spin-Orbit Torques Workshop, SPINTEC, CEA-INAC / CNRS / University Grenoble Alpes, Grenoble, France; 23-25.08.2022 Spins, waves and interactions, TU Desden, Greiifswald, Germany.

Honors / awards / other

2014 – Excellence in research prize awarded by TUCN. 2016 – Invited professor University Paris 13, Paris, France. 2017 – Invited researcher at SPINTEC-CEA, Grenoble, France. 2017 – Jury member of a PhD thesis University Grenoble Alpes, Grenoble, France. 2019 – Jury member of a PhD thesis University Grenoble Alpes, Grenoble, France.

Reviewer

Reviewer for the following journals: Nature Communications, Advanced Materials, Advanced Science, Advanced Electronic Materials, Physical Review Letters, Physical Review B, Physical Review Materials, Applied Physics Letters, Journal of Physics D: Applied Physics, Journal of Applied Physics, Nanotechnology, Small, Journal of Magnetism and Magnetic Materials etc.

Key expert for the following funding agencies: the National Science Center of Poland and the Czech Science Foundation; Member of the International Technical Program Committee for EUROSENSORS conferences.

Cluj-Napoca,
28.04.2025

Mihai S. GABOR