Maria-Iuliana Toma

Date of birth: **Nationality:** **Gender**

WORK EXPERIENCE

10/01/2017 – 01/03/2019
PHYSICIST – MEDFUTURE – THE RESEARCH CENTER FOR ADVANCED MEDICINE, UMF 'IULIU HAȚIEGANU" CLUJ-NAPOCA

- the study of proteomics and metabolomics using high resolution mass spectroscopy and other special techniques;
- the development and application of new technologies in molecular and functional imaging for personalized therapies, clinical trials and also, pharmacoproteomics and pharmacogenomics, which will provide new concepts necessary to design specific therapies based on identifying molecular mechanisms.

Human health and social work activities | http://www.medfuture.umfcluj.ro |

8th Victor Babeş Street, 400012, Cluj-Napoca, Romania

07/2014 – 01/08/2014
VOLUNTARY STUDENT AT SUMMER SCHOOL 2014, INSTRUMENTATION – EMERSON (DOBOACĂ PAUL)

-workshop;
-training;
-measurements with applications in industrial and petrochemical fields.

http://www.emerson.com/en-US/Pages/Default.aspx | 4th Emerson Street, 400641, Cluj-Napoca, Romania

EDUCATION AND TRAINING

2016 – CURRENT – Cluj-Napoca, Romania
PHD STUDENT – Faculty Of Physics, Babes-Bolyai University

-synthesis and characterization of doped ZnO thin films and other nanostructures;
-structural, optical, electrical and spectroscopic measurements;
-analysis and characterization of the obtained data

10/2017 – 08/2018 – Chemnitz, Germany
ERASMUS TRAINEESHIP – Technische Universität Chemnitz

Preparation and characterization of doped ZnO nanoparticles:
- wet chemical synthesis method to obtain nanoparticles in colloidal solutions;
- microstructural and optical properties as well as size and distribution of nanoparticles were investigated;
- Raman, UV-Vis and Transmission Electron Microscopy (TEM) instruments were used for measurements;
- interpretation of results.

01/10/2015 – 29/02/2016 – Chemnitz, Germany
ERASMUS TRAINEESHIP – Technische Universität Chemnitz

Deposition of thin films using spray coating method:
- preparation of solutions and substrates;
- deposition process and adjusting parameters;
- heat treatment, and flashlamp annealing;
- characterization techniques of the obtained films: AFM, SEM, XRD, ellipsometry and optical measurements;
- interpretation of results.

EQF level 7

10/2014 – 01/07/2016 – Cluj-Napoca, Romania
MASTER DEGREE – Faculty Of Physics, Babes-Bolyai University

-advanced knowledge of solid state physics;
-magnetic and superconductor materials (bulk, nanostructures, thin films);
-materials with technical applications;
-methods of preparation;
-different ways to study the materials;
-processing and data acquisition;
-development of master thesis.

10/2011 – 07/2014 – Cluj-Napoca, Romania
BACHELOR DEGREE IN BIOMEDICAL PHYSICS – Faculty Of Physics, Babes-Bolyai University

-basic theoretical physics (mechanics, optics, electronics, thermodynamics);
-advanced theoretical physics (analytical mechanics, quantum mechanics, solid state, atomic and molecular physics, solid and semiconductors);
-specific subjects (anatomy and physiology, radiology, biophysics, radiation dosimetry and nuclear medicine).
-development of bachelor thesis ("*The study and analysis of ZnO thin films doped with Al and 4f elements*").

09/2007 – 06/2011 – Cluj-Napoca, Romania
HIGH SCHOOL DIPLOMA – „Avram-Iancu" High School

-Physics
-Biology
-Chemistry
-Mathematics
-Computer skills

LANGUAGE SKILLS

Mother tongue(s): ROMANIAN

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	B2
FRENCH	B1	B1	A2	B1	A2
GERMAN	A2	A2	A2	A2	A2
RUSSIAN	A1	A1	A1	A1	A1

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

CONFERENCES AND SEMINARS

Conferences

-Participation at the International Conference "Conference on Advanced Spectroscopies on Biomedical and Nanostructured Systems" (BioNanoSpec), Romania, 2014,with the topic :
- **Structural and morphological properties of RE-doped AlZnO thin films (RE=Nd, Gd, Er) grown by RF magnetron sputtering (poster)**

-Participation at the International Conference "Processes in Isotopes and Molecules" (PIM), Romania, 2016, with the topic:
- **Influence of Al and Ga on the structure and optical properties of ZnO thin films (poster)**

-Participation at the International Conference "International Conference On Physics Of Advanced Materials" (ICPAM), Romania, 2016, with the topics:
- **The influence of deposition techniques on structural and morphological properties of rare earth-doped AZO thin film (poster)**
- **Characterization of multifunctional thin films of ZnO co-doped with Al, Ga and rare earth elements (poster)**

-Autumn School on Physics of Advanced Materials (PAMS-2), Romania, 2016, with the topic:
- **Characterization of the structural and optical properties of ZnO thin films doped with Ga and (Al+Ga) (poster)**

-Participation at the DPG Spring Conference and EPS-CMD27, Berlin, 2018, with the topic:
- **The Influence of Rare Earth Doping and Co-doping of ZnO Nanoparticles on Structural and Optical Properties (poster)**

-Participation at the 10th international conference in the series of the Solid State Surfaces and Interfaces conferences, SSSI, Slovakia, 2018, with the topic:
- **Optical and Structural Characterization of Doped ZnO Nanoparticles Prepared in Colloidal Solution (poster)**

-Participation at the 19th International Balkan Workshop on Applied Physics, Romania, 2019, with the topic:
- **Optical and structural properties of co-doped ZnO (Ga and rare earths) thin films deposited by RF magnetron sputtering technique (oral presentation)**

HONOURS AND AWARDS

Grant and Article Competition

GC35595 - Grant, **2020**, Babes-Bolyai University, Romania
- The article: C. Lung, M. Toma, M. Pop, D. Marconi, A. Pop, Characterization of the structural and optical properties of ZnO thin films doped with Ga, Al and (Al+Ga), Journal of Alloys and Compounds, 725, p. 1238-1243, **2017.**
- The article: M. Toma, D. Marconi, M. Pop, C. Lung, A. Pop, Influence of substrate-target distance on Structural and optical Properties of Ga and (Al+Ga)-doped ZnO thin films deposited by radio frequency sputtering, Analytical Letters, 52, p.2227-2238, **2019**.

Article Competition, **2017**: PN-III-P1-1.1-PRECISI-2017-19849
- The article: C. Lung, M. Toma, M. Pop, D. Marconi, A. Pop, Characterization of the structural and optical properties of ZnO thin films doped with Ga, Al and (Al+Ga), Journal of Alloys and Compounds, 725, p. 1238-1243, **2017.**

ORGANISATIONAL SKILLS

Organisational skills

- ability to solve immediate problems under stress and deadlines gained through my experience in laboratory activities;
- able to organize and lead teams;
- confident in handling new tasks;
- skilful in laboratory work.

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

- good communication skills gained through my experience in volunteer activities and through Erasmus program

JOB-RELATED SKILLS

Job-related skills

Equipment use:
- X-Ray Diffractometer (XRD);
- Resistivity measurements;
- AFM measurements;
- Ellipsometry measurements;
- Raman measurements;
- Thin film deposition using radio-frequency (RF) magnetron sputtering and spray coating techniques;
- Preparation of nanoparticles in colloidal solution by a wet soft chemical route;
- Target and chemical preparation.

Use of protein analysis equipment:
- Mass Spectrometer coupled with Inductive Plasma System (ICP-MS);
- Sample preparation for measurements;
- Microwave digestion and synthesis of samples.

OTHER SKILLS

Other skills

- skilfulness in practical domains gained through my experience in laboratory activities;
- sociable and dynamic person;
- patient, tenacious and persevering person;
- positive and enthusiast.

SCIENTIFIC ARTICLES

Scientific articles

- **Published**: D. Marconi, C. Lung, M. Toma, A. V. Pop. The Influence of Processing Parameters on Structure of Al-ZnO Thin Films. *Studia Universitatis Babeş-Bolyai Physica 2, Vol. 58 (LVIII), p.15-20,* ***2013.***
- **Published** Studia Chemia UBB: M. Toma, D. Marconi,C. Lung, O. Ponta, A. V. Pop, Structural, morphological and optical properties of re-doped AZO thin films (Re=Nd, Gd, Er) grown by RF magnetron sputtering, **2015.**
- **Published** in Analytical Letters: C. Lung, M. Toma, D. Marconi, A. Pop, Characterization of the Aluminium Concentration upon the Properties of Aluminium Zinc Oxide Thin Films, 49:8, p. 1278-1288, **2016.**
- **Published** in Journal of Alloys and Compounds: C. Lung, M. Toma, M. Pop, D. Marconi, A. Pop, Characterization of the structural and optical properties of ZnO thin films doped with Ga, Al and (Al+Ga), 725, p. 1238-1243, **2017.**
- **Published** in Studia UBB Physica: M. Toma, C. Lung, D. Marconi, A. Pop, Structural and Optical Characterization of ZnO Films Doped With Ni, 63, 89–99, **2018**.
- **Published** in Journal of Electrical Engineering: M. Toma, N. Ursulean, D. Marconi, A. Pop, Structural and optical characterization of Cu doped ZnO thin films deposited by RF magnetron sputtering, 70, 127–131, **2019**.
- **Published** in Analytical Letters: M. Toma, D. Marconi, M. Pop, C. Lung, A. Pop, Influence of substrate-terget distance on structural and optical properties of Ga and (Al+Ga)-doped ZnO thin films deposited by radio frequency sputtering, 52, p. 2227-2238, **2019**.

SCIENCE ACTIVITIES

Science Activities

- Participation at **Scientific Communications Session of Physicists Students**, dates16 May 2014, Faculty of Physics, UBB
- Participation in volunteer scientific activities organized by the **Faculty of Physics**:
- "Sâmbăta experimentelor" , years: 2011, 2012, 2015, 2016, 2017, and 2019
- "Noaptea cercetătorilor" year 2014, 2015
- Participation at **The Pentagon of Physics**, Faculty of Physics, UBB, Cluj-Napoca, July-2016, with the oral presentation:
- **Synthesis and characterization of ZnO thin films co-doped with Al and rare earth elements**