

PERSONAL INFORMATION

Petronela Garoi



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Sex Female | Date of birth 09/06/1977 | Nationality Romanian

WORK EXPERIENCE

- 2019 - present Scientific Researcher (CS II)
Study of transparent conductive oxides integrated into solar cells structures; analysis of structural (XPS, XRD, SEM&EDX), optical (transmission and reflection spectra) and photoelectrical properties of the photovoltaic cells.
- 2007 - 2018 Scientific researcher (CS III)

Thin films deposition by modern techniques, such as: magnetron sputtering, vacuum thermal evaporation, etc.; analysis of structural and optical properties of the components of CIGS solar cells; preparation of laboratory experiments for undergraduates students.
Coordinator of a PD ongoing project

National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor Street, Magurele 077125, Ilfov, Romania
- 2003 - 2007 Scientific researcher (CS)
Thin films deposition by vacuum thermal evaporation; study of optical, electrical and photoelectrical properties of some binary semiconductors, preparation of laboratory experiments for undergraduates students; publication of several scientific papers on the above topics.

Al. I. Cuza University/ Faculty of Physics, Department of Thin Films Layers, Iasi, Romania

EDUCATION AND TRAINING

- 2003 - 2007 PhD

Preparation techniques of advanced materials
Experimental methods in physics of materials
Transparent and conducting thin films based on oxide semiconductors
Study of some binary semiconductors, such as: ZnTe, CdS, CdSe, etc.
Experience in using the vacuum and deposition installation

Al. I Cuza University, Faculty of Physics, Iasi, Romania
- 2001 - 2003 MSc

Physical processes in semiconductor thin films
Study of physical properties of CdSe thin films

Al. I Cuza University, Faculty of Physics, Iasi, Romania

1997 - 2001 BSc
 Study of the recombination mechanisms of charge carriers in semiconductors
 General and applied physics
 Al. I Cuza University, Faculty of Physics, Iasi, Romania

PERSONAL SKILLS

Mother tongue(s) **Romanian**

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	A2	A2	A2	A2	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Communication skills ▪ I have worked in various research teams in the native country and also I worked with students and attended professional tutorials communication

Organisational / managerial skills Good managerial skills proved in the financial and technical implementation of 12 scientific projects, as well in the organization of 2 scientific conferences. Much experience with various vacuum and deposition installations, structural analysis equipment (XPS, XRD, SEM&EDX) and the measure and control instruments.

Research Projects

1. Project Director – TD 458/2007 Grant financed by CNCSIS (Grant TD no. 4, CNCSIS code: 458). Project theme: "Study of electrical and optical properties of some binary semiconductors (CdSe, ZnTe) in thin films used in photovoltaic cells technology".
2. Project Director – PD52/2011 Project in October 2012 (PD 52/5.10.2011), with mentor Dr. Valentin Craciun. The project is entitled "Transparent and conductive oxide thin films deposited on flexible substrates for efficient solar cells", was successfully completed in September 2014.
3. Project Director - In July 2017 she won, a project - STAR 178/20.07.2017 - 2018, namely: SPACEPHOTONICS, for 18 months, at INFLPR, in the group of "Advanced Technologies in Thin Films"

Job-related skills Knowledge of general physics with application to metamaterials and photovoltaic cells.
 ▪ Much experience with vacuum deposition installations, with control and measurement instruments and the structural analysis equipments

Digital competence	SELF-ASSESSMENT				
	Information processing	Communication	Content creation	Safety	Problem solving
	- Independent user	- Independent user	- Independent user	- Basic user -	Basic user -

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Driving licence I am a holder of a Romanian drivers license. Category B vehicle

▪ Knowledge of Windows OS, Microsoft Office, HTML, Origin, Maple 7, PHP, Web design

ADDITIONAL
INFORMATION

3 – 7 November 2008

I perfected in the field of X-ray diffraction following the **XRD training course**, in Almelo, Netherlands within the PANalytical firm

8 – 12 May 2017

I perfected in the field of X-ray photoelectron spectroscopy following the **XPS training course**, in INFLPR.

5 – 15 June 2018

I perfected in the field of scanning electron microscopy following the **SEM training course**, in INFLPR.

- I attended **two summer schools**:

- on this subject: within the **SOCRATES/ERASMUS program** during June 28 – July 9, 2004 (with a scholarship) at Summer School on Physics of Advanced Materials, organized by Aristotle University from Thessaloniki, Greece;
- **DAAD Summer School**, during September 26 – October 8, 2005 held in Sinaia, Romania.

ANNEXES
PUBLICATIONS LIST

Books

Petronela Garoi, *On the study of physical properties of some heterojunctions*, Lambert Academic Publishing GmbH & Co., Saarbrücken, Deutschland, ISBN: 978-3-659-56661-5 (2014);

Patents

1. Petronela Garoi, Cristian Viespe, Florin Garoi, Valentin Craciun, *Thermal treatment procedure of oxide thin films for photovoltaic cell electrodes*, Patent RO-BOPI 5/2018, No. 130768B1
2. Petronela Garoi, Cristian Viespe, Doina Craciun, Florin Garoi, Valentin Craciun, *Rapid heating/ cooling process applied to doped transparent contacts used in chalcogenide solar cells*, Patent application, RO approved patent 2019, No. a 2019/00235.

Scientific papers

* ISI Web of Knowledge

1. Petronela Prepelita, G.I.Rusu, C.Parghie, "The Structural and Optical Characterization of Thin-Film ZnTe/CdSe Heterojunctions", Journal of Optoelectronics and Advanced Materials **9**(10) (2007) 3200.
2. C.Baban, G.I.Rusu, Petronela Prepelita, "On the Optical Properties of Polycrystalline CdSe Thin Films", Journal of Optoelectronics and Advanced Materials **7** (2005) 817.
3. G.I.Rusu, Petronela Prepelita, N. Apetroaei, G. Popa, "On the Optical Electronic Transport and Optical Properties of ZnTe thin films", Journal of Optoelectronics and Advanced Materials **7** (2005) 829.
4. G. I. Rusu, Petronela Prepelita, R. S. Rusu, N. Apetroaei, G. Oniciuc, A. Amariei, "On the Structural and Optical Characteristics of Zinc Telluride Thin Films", Journal of Optoelectronics and Advanced Materials **8** (2006) 996.
5. P. Prepelita, C. Baban, F. Iacomi, "The study of the influence of Al and Sn doping on the optical and electrical properties of ZnO thin films", Journal of Optoelectronics and Advanced Materials **9** (2007) 2166.
6. M. Purica, F. Iacomi, C. Baban, P. Prepelita, N. Apetroaei, D. Mardare, D. Luca, "Investigation of structural properties of ITO thin films deposited on different substrates," Thin Solid Films, **515** (2007) 8674-8678.
7. G. I. Rusu, A. Airinei, M. Rusu, Petronela Prepelita, L. Marin, V. Cozan, I.I.Rusu, " On the electronic transport mechanism in thin films of some new poly(azomethine sulfone)s", Acta Materialia **55** (2007) 433.
8. F.Iacomi, M.Purica, E. Budianu, Petronela Prepelita, D.Macovei, "Structural studies of some doped CdS thin films deposited by thermal evaporation", Thin Solid Films **515** (2007) 6080.
9. Budianu E Purica M, Iacomi F Baban C, Prepelita P, Manea E, "Silicon metal-semiconductor-metal photodetector with zinc oxide transparent conducting electrodes", Thin Solid Films, 516 7 (2008) 1629-1633.
10. Rusu GI, Sunel V, Rusu GG, Diciu M, Moise M, Pintilie O, Dulea N, Prepelita P., "On the electronic transport properties of some new esters of n-(p-nitrobenzoyl)- d,l- phenylalanine in thin films, Journal of Optoelectronics and Advanced Materials, **10** 9 (2008) 2405-2412.

11. Rusu GI, Airinei A, Hamciuc V, Rusu GG, Rambu P, Diciu M, Garoi P, Rusu M, "Electronic and Optical Properties of Some Polysulfone-Polydimethylsiloxane Copolymers in Thin Films", Journal of Macromolecular Science Part B-Physics, **48** 2 (2009) 238-253.
12. Petronela Prepelita, R. Medianu, Beatrice Sbarcea, F. Garoi, Mihaela Filipescu, "The influence of using different substrates on the structural and optical characteristics of ZnO thin films", Applied Surface Science 256 (6) (2010) 1807–1811.
13. Petronela Prepelita, R. Medianu, N.Stefan, F. Garoi, F. Iacomi, "On the structural and electrical characteristics of zinc oxide thin films", Thin Solid Films 518 (16) (2010) 4615-4618.
14. Petronela Prepelita, G.G.Rusu, G.I.Rusu, "Effect of Heat Treatment on the Structural and Optical Characteristics of Polycrystalline ZnTe Thin Films", ROMOPTO 2006, Sibiu, Romania, Proceeding of SPIE 6785(2006)1Y.
15. F.Iacomi, C.Baban, N.Iftimie, P.Prepelita and D.Luca, "Influence of Substrate Nature and Annealing on Electro-Optical Properties of ZnO Thin Films", Sixth International Conference of the Balkan Physical Union, Istanbul, Turcia, AIP Conference Proceedings 899 (2007) 253.
16. Petronela Prepelita, C. Pirghie, G. I. Rusu, "Effects of Post-Deposition Heat Treatment on the Optical Characteristics of ZnTe Thin Films", Sixth International Conference of the Balkan Physical Union, Istanbul, Turcia, AIP Conference Proceedings 899 (2007) 641.
17. Petronela Prepelita, R. Medianu, F. Garoi, A. Moldovan, A.M. Vlaicu, "Effects of layer by layer deposition on the structural and optical characteristics of thin films", ROMOPTO 2009, Sibiu, Romania, Proc. SPIE, Vol. 7469, (2009) 74690T 1- 6.
18. Petronela Prepelita, R. Medianu, F.Garoi, A. Moldovan, "Growth of ZnO:Al thin films onto different substrates", EMRS, AIP Conference Proceedings, 1292 (2010) 213-216.
19. Petronela Prepelita, Rares Medianu, Felicia Iacomi, Ion Sandu, Physico-chemical Properties of CuInGa-ZnS Heterostructure Deposited, REV. CHIM. (Bucharest) 62 9 (2011) 905-908.
20. Petronela Prepelita, N. Stefan, C. Luculescu, F. Garoi, R. Birjega, Evolution of the properties of ZnO thin films subjected to heating treatments, Thin Solid Films 520 (2012) 4689–4693.
21. P. Prepelita, V. Craciun, M. Filipescu, F. Garoi Sputtered zinc oxide thin films deposited on polyimide substrate and annealing effect on the physical characteristics, Thin Solid Films, Volume 545, (2013) 564-570.
22. P. Prepelita, V. Craciun, G. Sbarcea, F. Garoi, Relevance of annealing on the stoichiometry and morphology of transparent thin films, Applied Surface Science 306 (2014) 47 - 51.
23. P. Prepelita, V. Craciun, F. Garoi, A. Staicu, Effect of annealing treatment on the structural and optical properties of AZO samples, Applied Surface Science, 352 (2015) 23 - 27.
24. Ionel Stavarache, Valentin Adrian Maraloiu, Petronela Prepelita and Gheorghe Iordache, Nanostructured germanium deposited on heated substrates with enhanced photoelectric properties, Beilstein J. Nanotechnol. 7(2016)1492–1500.
25. Petronela Prepelita, I. Stavarache, C. Negrila, F. Garoi, V. Craciun, Chalcogenide thin films deposited by rfMS technique using a single quaternary target, Applied Surface Science, 424(2017)421-427.
26. Petronela Prepelita, M. Filipescu, I. Stavarache, F. Garoi, D. Craciun, Transparent thin films of indium tin oxide: Morphology–optical investigations, inter dependence analyzes, Applied Surface Science, 424 3 (2017) 368-373.
27. Stavarache, Ionel; Maraloiu, Valentin Adrian; Negrila, Catalin; Prepelita Petronela, Gruiu I, Iordache G/Photo-sensitive Ge nanocrystal-based films controlled by substrate deposition temperature SEMICONDUCTOR SCIENCE AND TECHNOLOGY Volume: 32 Issue: 10 Article Number: 105003, 2017.
28. B.G. Sbarcea, Petronela Prepelita, L.N. Leonat, X Ray study of GZO thin films, Acta Crystallographica A-Foundation and Advances,74 (2018) E287.
29. Stavarache, VS.Teodorescu, Petronela Prepelita, C. Logofatu, ML. Ciurea, *Ge nanoparticles in SiO2 for near infrared photodetectors with high performance*, Scientific Reports 9 (2019) 10286.
30. Petronela Prepelita, I. Stavarache, D. Craciun, F. Garoi, C. Negrila, G. Sbarcea, V Craciun, Rapid thermal annealing for high-quality ITO thin films deposited by radio-frequency magnetron sputtering, Beilstein Journal of Nanotechnology, 10(2019)1511-1522.
31. F. Garoi, C. Udrea, C. Damian, Petronela Prepelita, D. Coltuc, THz Laser Beam Profiling by Homogeneous Photodoping of High Resistivity Silicon in a Compact Single-Pixel Detection Setup, IEEE Transactions on Terahertz Science and Technology, 9 (2019) 200-208.