



CURRICULUM VITAE

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Cercetator Stiintific grad III – Laboratorul de Nanobiotehnologie (Centrul de Nanotehnologii), Institutul National de Cercetare si Dezvoltare pentru Microelectronica - IMT Bucharest

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Educatie:

2016 – 2019: Studii Doctorale, Fizica Starii Condensate, Facultatea de Fizica, Universitatea din Bucuresti. Teza de doctorat: "Investigatii nedistructive in nanomateriale utilizand metode de raze X", Magna cum laude, conducator de doctorat: Prof. D. Dragoman; Abstract: https://www.imt.ro/organisation/research%20labs/L1/theses_CR.pdf

2015 – 2017: Studii masterale, Facultatea de Mecanica si Mecatronica, Universitatea Politehnica din Bucuresti, Inginerie de Mentenanta pentru ELI-NP, Titlul lucrarii de disertatie: „*Studii de material utilizand fascicule de raze X*”

2014 – 2016: Studii masterale, Fizica Teoretica si Computationala, Universitatea din Bucuresti, Facultatea de Fizica. Titlul lucrarii de disertatie: „*Investigation of the threading dislocations in GaN epilayers on sapphire substrate*”.

2011 – 2014: Studii de licenta, Facultatea de Fizica, Universitatea din Bucuresti. Titlul lucrarii de licenta: „*Coliziunea proton-proton la LHC*”.

Experienta profesionala

2014 – Prezent: Cercetator Stiintific – Laboratorul de Nanobiotehnologie, Institutul National pentru Cercetare si Dezvoltare in Microtehnologie.

2017 – Prezent: Coordonator al difractometrului de raze X *Ultra High Resolution Triple Axis Multiple Reflection SmartLab X-ray Diffraction* – MINAFAB IMT

(www.imt.ro/echipamente/x_ray_system.htm)

Expertiza: filme subtiri si materiale cu dimensionalitate redusa; teoria cinematica si dinamica a difractiei de raze X; caracterizare structurala utilizand diferite metode de raze X: XRD, XRR, SAXS; stres si defecte structurale in nanomateriale, nanocompozite and heterostructuri; evaluarea dinamicii microstructurii in experimente de incarcare-descarcare in baterii; fabricare

de microsupercapacitori/dispozitive electrocromice, cresteri de filme subtiri prin ablatie laser; spectroscopie Raman si cu fotoelectroni (XPS); analiza morfologiei de suprafata.

Stagii de colaborare/cercetare

Stagiu de cercetare realizat in cadrul programului bilateral Romania-Ucraina la **Institutul Politehnic din Kiev**, 4-10 noiembrie 2017.

Stagiu de pregatire sub supravegherea Prof. Olivier Durand si Dr. Antoine Letoublon, Institutul National de Stiinte Aplicate, Rennes, France 15-22 septembrie 2019.

Experienta in proiecte de cercetare

❖ **Program acces la surse de sincrotron** (programul CALIPSO) la linia de radiatie sincrotron BESSY II (Berlin) in cadrul proiectului H2020 European Project, no. 730872 pentru doua experimente: „*Strain gradient study of BiFe_{1-x}Co_xO₃ ferroelectric stacking multilayers for photovoltaic applications*” si „*Structural study of VO₂: microstructure and strain characterization*”, 7 – 15 noiembrie 2019.

❖ **Program de acces de infrastructuri europene de cercetare** (NFFA.eu) la Institutul Catalan de Nanostiinte, ICN2, Barcelona cu propunerea: „*Vanadium oxides thin films deposited by pulsed laser deposition: charge storage devices with enhanced Li-diffusion*”, 19 noiembrie – 2 decembrie 2022 (Dr. Jose Manuel Caicedo Roque si Dr. Jose Santiso) – cresteri de oxizi prin ablatie laser (PLD), caracterizari cu spectroscopie de fotoelectroni (XPS), difractie de raze X (XRD) si microscopie de transmisie cu electroni (TEM).

❖ *Membru in 20 proiecte nationale si 6 proiecte europene.*

❖ Responsabil de faza in proiectul nucleu PN 1916/2019 – “*Nanosisteme de amplificare a semnalului în senzorială pe baza markerilor activi optic, electronic și electrochimic pe substrat nanostructurat de Si și SiC*” (2019 – 2023) - Stage 5: **Caracterizare nanomateriale/nanostructuri prin metode avansate; evaluarea stresului și a interfețelor în nanostructuri semiconductoare.**

Vizibilitatea activitatii de cercetare

- **61 lucrari ISI publicate** (7 ca prim autor: 3 in Q1, 2 in Q2 and 2 in Q3); -

selectie 10 lucrari publicate:

1. **C. Romanitan**, R. Gavrila, M. Danila *Comparative study of threading dislocations in GaN epitaxial layers by nondestructive methods*, **Materials Science Semiconductor Processes** **57**, 32-38 (2017) – IF = 4.64.

2. **C. Romanitan**, *Correlation between threading dislocations in highly mismatched GaN heteroepitaxial layers*, **Solid State Communications**, 268, 51-55 (2017) – IF = 1.93.

3. I. Mihalache, A. Radoi, R. Pascu, **C. Romanitan**, E. Vasile, M. Kusko, *Engineering graphene quantum dots for enhanced ultraviolet and visible light p-Si nanowire-based photodetector*, **ACS Applied Materials & Interfaces** 9, 29234-29247 (2017) – IF = 10.38.
4. **C. Romanitan**, P. Varasteanu, I. Mihalache, D. Culita, S. Somacescu, R. Pascu, E. Tanase, S. Eremia, A. Boldeiu, M. Simion, A. Radoi, M. Kusko, *High-performance solid state supercapacitors assembling graphene interconnected networks in porous silicon electrode by electrochemical methods using 2,6-dihydroxynaphthalen*, **Scientific Reports** 8, 9654 (2018) – IF = 4.99.
5. **C. Romanitan**, M. Kusko, M.C. Popescu, A. Radoi, P. Varasteanu, C. Pachiun *Unravelling the strain relaxation processes in silicon nanowire arrays by X-ray diffraction*, **Journal of Applied Crystallography**, 52, 1077-1086 (2019) – IF = 4.86.
6. **C. Romanitan**, I. Mihalache, O. Tutunaru, C. Pachiun, *Effect of the lattice mismatch on threading dislocations in heteroepitaxial GaN layers revealed by X-ray diffraction*, **Journal of Alloys and Compounds**, 858, 157723 (2021) – IF = 6.37.
7. **C. Romanitan**, P. Varasteanu, D.C. Culita, A. Bujor, O. Tutunaru *X-ray scattering profiles: revealing the porosity gradient in porous silicon*, **Journal of Applied Crystallography**, 54, 847-855 (2021) – IF = 4.86.
8. **C. Romanitan**, I.V. Tudose, K. Mouratis, M.C. Popescu, C. Pachiun, E. Koudamas, M. Sucheai *Structural investigations in electrochromic vanadium pentoxide thin films*, **Physica Status Solidi (a)**, 219(16), 210431 (2022) – IF = 2.17.
9. I.N. Bratosin, **C. Romanitan**, G. Craciun, N. Djourelou, M. Kusko, M.C. Stoian, A. Radoi *Graphitized porous silicon decorated with cobalt hexacyanoferrate nanocubes as hybrid electrode for high-performance supercapacitors*, **Electrochimica Acta**, 424, 140632, (2022) – IF = 7.33.
10. M. Dragoman, S. Vulpe, E. Aperathisis, C. Aivalioti, **C. Romanitan**, A. Dinescu, D. Dragoman, M. Aldrigo, M. Modreanu, A. Moldovan *Oxygen-vacancy induced ferroelectricity in nitrogen-doped nickel oxide* **Journal of Applied Physics** 131 (16), 164304 (2022) – IF = 2.87.

- **3 capitole de carte;**

- **1 aplicatie de patent** (C. Romanitan *et al.* 48857/14.08.2019) – dezvoltarea de microsupercapacitori pe baza ingineriei electrochimice a siliciului poros;

- **332 citari** excluzand auto-citarile;

- **Indicele Hirsch: 9** (ISI Web of Knowledge), **11** (Google Scholar);

Conferinte internationale

- Lucrari invitate:

1. C.Romanitan, ***New insights into the identification of strain in silicon nanowire arrays***, Opto-X-Nano 2019, Simpozionul *Novel Materials and Photonic Devices*, Okayama, Japonia, 2 – 7 decembrie 2019;
2. C.Romanitan, ***Experience from a beamtime as a twinning guest***, CALIPSOPlus Final Meeting 2021, Dresden, Germania, 13-15 octombrie 2021;
3. C.Romanitan, P.Varasteanu, R.Gavrila, A. Kuchuk, R. Allaparthi, M. Ware, G.Craciun, I.Mihalache, C.Pachiu, ***Microstructural investigations in GaN thin films via X-ray diffraction***, European Powder Diffraction Conference (EPDIC17), Simpozionul Stress-Strain, texture and thin films analysis, Sibenik, Croatia;
4. Seminar cu titlul ***Non-destructive investigation of the strain and structural defects in nanomaterials by X-ray diffraction*** tinut la Institutul National de Stiinte Aplicate, Rennes, France;

- 8 prezentari orale la conferinte internationale:

1. C.Romanitan, ***Advanced X-ray methods developed to explore the structural defects in GaN heteroepitaxial layers***, EMRS Spring 2019, Strasbourg, 13-19 iunie 2018.
2. C.Romanitan, ***Depth profiling of GaN by High Resolution X-ray diffraction***, 42nd International Semiconductor Conference, Sinaia, 9-11 octombrie 2019.
3. C.Romanitan, ***X-ray diffraction investigation of the strain and structural defects in nanomaterials***, Rigaku XRD Forum, 9-11 februarie 2020.
4. C.Romanitan, P. Varasteanu, I.Mihalache, O. Tutunaru, C.Pachiu, ***The relationship between threading dislocations and the Debye-Waller factor in GaN heteroepitaxial layers***, 43rd International Semiconductor Conference, virtual.
5. C.Romanitan, K. Mouratis, I.V. Tudose, I. Bratosin, O. Tutunaru, C.Pachiu, E. Koudoumas, M.Suchea, ***Strain investigation in V₂O₅ nanostructures for electrochromic/charge storage devices***, EMRS Spring 2021, virtual conference.
6. C.Romanitan, P. Varasteanu, L. Barbu-Tudoran, R. Allaparthi, M.E. Ware, C. Pachiu, O. Tutunaru, Y.I. Mazur, A.V. Kuchuk, ***Non-destructive investigation of the edge and screw threading dislocations in GaN layers***, ICPAM conference, 24-30 septembrie 2022, mod hibrid
7. C. Romanitan, I. Bratosin, D. Culita, M. Kusko, A. Radoi, P. Varasteanu, O. Tutunaru, ***Non-destructive investigations of graphitized porous silicon for charge storage devices***, Small Angle Conference, Campinas, Brazil, 13-19 septembrie 2022, modul hibrid.

8. C.Romanitan, I. Mihalache, S. Vulpe, M. Stoian, I.V.Tudose, K. Mouratis, O. Tutunaru, N.Djourelou, M. Sucheas, **Vanadium oxide by radio frequency magnetron sputtering and spray pyrolysis technique: structural and optical properties**, 45th International Semiconductor Conference, Poiana Brasov, Romania, 12-14 octombrie 2022.

- **10 contributii de tip poster** la conferinte internationale

- **Premii:**

1. **Best oral presentation – young scientists**, *Non-destructive investigation of edge and screw threading dislocations in GaN layers*, 13th International Conference on Physics of Advanced Materials, 2021, Sant Feliu de Guixols, Spania.

2. **Young Scientist Award**, *Strain analysis in SiNWs-GQDs core-shell heterostructures*, 32nd IUCr European Crystallography Meeting, 16-23 august 2021, Praga, Cehia.

3. **IUCR Young Scientist Award**, *Microstructural investigations in GaN thin films via X-ray diffraction*, The European Powder Diffraction Conference, 31 mai – 4 iunie 2022, Sibenik, Croatia.

4. **Best paper student**, *Depth-profiling of GaN by High-resolution X-ray diffraction*, 42nd International Semiconductor Conference, 2019, Sinaia, Romania

Activitati academice

2017 - 2019 Curs si laborator de *Micro si nanotehnologii pentru aplicatii medicale* pentru studenti masteranzi din Universitatea Politehnica din Bucuresti

Activitati de organizare

Membru in comitetul stiintific si de organizare la **"3rd International Workshop Advances on Photocatalysis"**, 28-29 iunie 2021.

Membru fondator **Romanian Synchrotron User Organization (ESUO)** pentru facilitarea accesului cercetatorilor la facilitati de scara larga (sincrotron, lasere cu electroni liberi).



11.01.2023