Curriculum Vitae

1. Personal information

Surname: AVRAM

First Name: Radu Daniel

Nationality: Romanian

Date of birth: 10.04.1990

Languages: English

Romanian (native tongue)

Office: National Institute for Laser, Plasma and Radiation Physics (INFLPR)

Plasma Physics and Nuclear Fusion Laboratory

409 Atomistilor Str., P.O. Box MG-36, Bucharest R-077125, Romania

E-mail: radu.avram@inflpr.ro

2. Education and Training

Institution	Period	Degrees or Diplomas
Faculty of Physics, University of Bucharest	October 2008 - June 2011	Diploma in Physics
Faculty of Physics, University of Bucharest	October 2011 - June 2013	MSc in Physics
Faculty of Physics, University of Bucharest	October 2016 – December 2021	Phd in Physics*

*****Granted by Order 3677/03.05.2022 of the Minister of the Ministry of National Education

Other Specializations and Qualifications:

Three Wise Men Winter School on Luminescent Nanothermometry for Biomedical Applications, 8-11.01.2020, Miraflores de la Sierra, Madrid, Spain

Nordic Training School for Potential Users “Luminescence dynamics: analyzing relaxation processes”, Riga, Latvia, 10-12 April 2019.

Laserlab User Training Workshop on Time-Resolved Techniques (TReT), BioCeV, Vestec, Czech Republic, 20-22 June 2018.

XXIII International Krutyn Summer School “Advanced Lanthanide Molecules and Materials for Bioimaging and Medical Diagnostics: State of the Art”, Krutyn, Poland, 20 - 26 May 2018

XI International Krutyn Summer School 2012, “Cutting-Edge Luminescent Materials: Shifting the Frontiers” Krutyn, Poland, 23-29.09.2012

10th European short course on “Principles and Applications of Time-Resolved Fluoroscence Spectroscopy” Berlin, Germany, 29.10-01.11.2012.

3. Professional experience

Institution	**Period**	**Position**
National Institute for Laser, Plasma and Radiation Physics; Laboratory of Solid-State Quantum Electronics	June 2012 - April 2015	Research Assistant
National Institute for Laser, Plasma and Radiation Physics; Laboratory of Solid-State Quantum Electronics	May 2015 - July 2017	Scientific Researcher
National Institute for Laser, Plasma and Radiation Physics; X-ray and Optical Imaging Laboratory	August 2017 – August 2022	Scientific Researcher
National Institute for Laser, Plasma and Radiation Physics; X-ray and Optical Imaging Laboratory	September 2022 – Present	Scientific Researcher rank III

4. Publications in peer reviewed journals:

1. C. Tiseanu, B. Cojocaru, **D. Avram**, V. Parvulescu, M. Sanchez Dominguez "Isolated versus Sm^{3+}-defect associations in CeO_2: a spectroscopy investigation" *J. Phys. D: Appl. Phys.* **46**, 275302 (2013)
2. **D. Avram**, C. Rotaru, B. Cojocaru, M. Sanchez-Dominguez, M. Florea, C. Tiseanu "Heavily impregnated ceria nanoparticles with europium oxide: spectroscopic evidences for homogenous solid solutions and intrinsic structure of Eu^{3+} - oxygen environments", *J. Mater. Sci.*, **49**(5), 2117-2126 (2014)
3. C. Tiseanu, V. Parvulescu, **D. Avram**, B. Cojocaru, M. Boutonnet, M. Sanchez-Dominguez "Local structure and nanoscale homogeneity of CeO_2-ZrO_2: Differences and similarities to parent oxides revealed by luminescence with temporal and spectral resolution", *Phys. Chem. Chem. Phys.* **16**, 703-710 (2014)
4. C. Tiseanu, V. Parvulescu, **D. Avram**, B. Cojocaru, N. Apostol, A. V. Vela-Gonzalez, M. Sanchez-Dominguez "Structural down- and phase selective up- conversion emission properties of mixed valent Pr doped into oxides with tetravalent cations", *Phys. Chem. Chem. Phys.* **16**, 5793-5802 (2014)
5. C. Tiseanu, V. Parvulescu, **D. Avram**, B. Cojocaru, M. Sanchez-Dominguez "Exceptional capability of CeO_2- ZrO_2 to "dissolve" europium oxide established by X-ray Diffraction, Raman and time-resolved luminescence spectroscopy", *Dalton Trans.* **43**(20), 7622-7630 (2014)
6. **D. Avram**, C. Gheorghe, C. Rotaru, B. Cojocaru, M. Florea, V. Parvulescu, C. Tiseanu "Lanthanide - lanthanide and lanthanide - defect interactions in co - doped ceria revealed by luminescence spectroscopy", *J. Alloys Compd.* **616**, 535-541 (2014)
7. C Gheorghe, L Gheorghe, A Achim, S Hau, **RD Avram**, G Stanciu “Optical properties of Sm^{3+} doped strontium hexa-aluminate single crystals” *J. Alloys Compd* **622**, 296-302 (2015)

8. **D. Avram**, B. Cojocaru, M. Florea, V. Teodorescu, I. Tiseanu, C. Tiseanu "NIR to Vis - NIR up - conversion and X-ray excited emission of Er doped high Z BiOCl," *Opt. Mater. Express* **5**, 951-962 (2015)
9. **D. Avram**, M. Florea, I. Tiseanu, C. Tiseanu "Time delay and excitation mode induced tunable red/near-infrared to green emission ratio of Er doped BiOCl", *J. Phys. D: Appl. Phys.* **48**(35), 355501 (2015)
10. **D. Avram**, M. Sanchez-Dominguez, B. Cojocaru, M. Florea, V. Parvulescu, C. Tiseanu "Toward a Unified Description of Luminescence – Local Structure Correlation in Ln Doped CeO_2 Nanoparticles: Roles of Ln Ionic Radius, Ln Concentration and Oxygen Vacancies", *J. Phys. Chem. C* **119**(28), 16303-16313 (2015)
11. **D. Avram**, A. Urda, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "Pure and almost pure NIR emission of Tm and Tm, Yb - CeO_2under UV, X - ray and NIR up - conversion excitation: Key roles of level selective antenna sensitization and charge - compensation", *Phys. Chem. Chem. Phys.* **17**(46), 30988-30992 (2015)
12. **D. Avram**, B. Cojocaru, M. Florea, C. Tiseanu "Advances in luminescence of lanthanide doped Y_2O_3: case of S_6 sites", *Opt. Mater. Express* **6**(5), 1635-1643 (2016)
13. M. Florea, **D. Avram**, B. Cojocaru, I. Tiseanu, V. Parvulescu, C. Tiseanu "Defects induced tunable near infrared emission of Er - CeO_2 by heterovalent co - dopants" *Phys. Chem. Chem. Phys.* **18**, 18268-18277 (2016)
14. **D. Avram**, I. Porosnicu, B. Cojocaru, M. Florea, C. Tiseanu "Time-gated down-/up-conversion emission of Ho-CeO_2 and Ho, Yb-CeO_2 nanoparticles" *J. Lumin.* **179**, 256-271 (2016)
15. B. Cojocaru, **D. Avram**, V. Kessler, V. Parvulescu, G. Seisenbaeva, C. Tiseanu "Nanoscale insights into doping behavior, particle size and surface effects in trivalent metal doped SnO_2" *Sci. Rep.* **7**(1) 9598 (2017)
16. I. Porosnicu, **D. Avram**, B. Cojocaru, M. Florea, C. Tiseanu "Up-conversion luminescence of Er (Yb)-CeO_2: Status and new results" *J. Alloys Compd.* **711**, 627-636 (2017)
17. **D. Avram**, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "Down-/Up-Conversion Emission Enhancement by Li Addition: Improved Crystallization or Local Structure Distortion?" *J. Phys. Chem. C.* **121** (26), 14274–14284 (2017)
18. **D. Avram**, C. Tiseanu "Thermometry properties of Er, Yb–Gd_2O_2S microparticles: dependence on the excitation mode (cw versus pulsed excitation) and excitation wavelength (980 nm versus 1500 nm)." *Methods and applications in fluorescence*, **6,** 025004 (2018).
19. M. Florea, **D. Avram**, V. A. Maraloiu, B. Cojocaru, C. Tiseanu, "Heavy doping of ceria by wet impregnation: a viable alternative to bulk doping approaches." *Nanoscale*, **10**(37), 18043-18054 (2018).
20. C. Colbea, **D. Avram**, B. Cojocaru, R. Negrea, C. Ghica, V. Kessler, G. Seinsebaeva, C. Tiseanu, "Full Tetragonal Phase Stabilization in ZrO_2 Nanoparticles Using Wet Impregnation: Interplay of Host Structure, Dopant Concentration and Sensitivity of Characterization Technique." *Nanomaterials*, **8**(12), 988 (2018).
21. **D. Avram**, I. Tiseanu, B. S. Vasile, M. Florea, C. Tiseanu, "Near infrared emission properties of Er doped cubic sesquioxides in the second/third biological windows." *Scientific reports*, **8**(1), 18033 (2018).
22. **D. Avram**, C. Colbea, M. Florea, C. Tiseanu, "Highly-sensitive near infrared luminescent nanothermometers based on binary mixture." *J. Alloys Compd*, **785**, 250-259 (2019).

23. B. Cojocaru, **D. Avram**, R. Negrea, C. Ghica, V. G. Kessler, G. A. Seisenbaeva, V. I. Parvulescu, C. Tiseanu, "Phase Control in Hafnia: New Synthesis Approach and Convergence of Average and Local Structure Properties" *ACS Omega*. **4**(5) 8881-8891 (2019)
24. **D. Avram**, C. Colbea, M. Florea, S. Lazar, D. Stroppa, C. Tiseanu "Imaging dopant distribution across complete phase transformation by TEM and up-conversion emission" *Nanoscale*, (2019) 10, 18043-18054 (The article is presented on the Front Cover of the Nanoscale Volume 11 Issue 36)
25. **D. Avram**, C. Colbea, C. Tiseanu "Effects of local symmetry on the upconversion emission mechanisms under pulsed excitation" *J. Mater. Chem. C*, (2019), 7, 13770-13777. (The article is presented on the Front Cover of the Journal of Materials Chemistry C Volume 7 Issue 44)
26. I. Porosnicu, C. Colbea, F. Baiasu, M. Lungu, M. C. Istrate, **D. Avram**, C. Tiseanu "A sensitive near infrared to near-infrared luminescence nanothermometer based on triple doped Ln -Y_2O_3" *Methods and Applications in Fluorescence* (2020), 8, 035005,
27. **D. Avram**, B. Cojocaru, C. Tiseanu, "First evidence from luminescence of lanthanide substitution in rutile TiO_2." *Materials Research Bulletin* (2021), 134, 111091.
28. **D. Avram**, A. A. Patrascu, M. C. Istrate, B. Cojocaru, C. Tiseanu, "Lanthanide doped TiO_2: Coexistence of discrete and continuous dopant distribution in anatase phase." *Journal of Alloys and Compounds* (2021), 851, 156849,
29. B. Cojocaru, C. Colbea, **D. Avram**, C. Istrate, L. Abramiuc, C. Tiseanu "Role of Ln type in the physical mechanisms of defect mediated luminescence of Li, Ln - SnO_2 nanoparticles", *Journal of Materials Chemistry C* (2021),9, 148-157.
30. M. Andruh, A. Topor, **D. Avram**, C. Maxim, C. Tiseanu, Radu Dascalu "Luminescence thermometry based on one-dimensional benzoato-bridged coordination polymers containing lanthanide ions" *Dalton Trans*. (2021), 50, 9881-9890,
31. **D. Avram**, I. Porosnicu, A. Patrascu, C. Tiseanu "Real-time thermal imaging based on the simultaneous rise and decay luminescence lifetime thermometry" *Adv. Phot. Res*. (2021), 2100208.
32. AM Voiculescu, S Hau, G Stanciu, **D Avram**, C Gheorghe "Optical thermometry through infrared excited green upconversion emissions of Er^{3+}-Yb^{3+} co-doped $LaAlO_3$ phosphors" J. Lumin. (2022), 242, 118602.
33. S Hau, G Stanciu, **D Avram**, L Gheorghe, C Gheorghe "Energy transfer and luminescent properties of Tb^{3+} and (Tb^{3+}, Yb^{3+}) doped CNGG phosphors" *Journal of Rare Earths* (2021) https://doi.org/10.1016/j.jre.2021.09.008
34. C Gheorghe, S Hau, G Stanciu, **D Avram**, A Broasca, L Gheorghe "Novel optical temperature sensors based on the emission of the Pr^{3+} ions doped $Ca_3(M, Ga)_5O_{12}$ (M^{5+}= Nb, Ta) garnet phosphors" Journal of Alloys and Compounds (2022) 922, 166178
35. **D. Avram**, A.A. Patrascu, I. Porosnicu, C. Tiseanu, "Emission colour tuning of Mn, Yb, Er-NaGdF 4 upconverting nanoparticles by energy density variation and pulse modulation*." Optical Materials Express* (2022), 12(5), 1894-1906.
36. **D. Avram**, C. Colbea, C. Tiseanu, C. "Heterogeneity effects of Tm upconversion emission in Mo, Tm codoped rare-earth garnets" Journal of Alloys and Compounds (2023) 944, 169226.
37. **D. Avram**, C. Colbea, A.A. Patrascu, M.C. Istrate, V. Teodorescu, C. Tiseanu, C. "Up-conversion emission in transition metal and lanthanide co-doped systems: dimer sensitization revisited" Scientific Reports (2023) 13(1), 2165.

38. **D. Avram**, A.A. Patrascu, M.C. Istrate, C. Tiseanu "Gd-Er interaction promotes NaGdF4: Yb, Er as a new candidate for high-power density applications" Journal of Materials Chemistry C (2023) 11, 10409-10419.
39. D Dragancea, T Mocanu, **D Avram**, M Răducă, C Tiseanu, M Andruh "Mixed-ligand mononuclear complexes obtained from salicylaldehyde and phenanthroline. Synthesis, crystal structures, and luminescence" Polyhedron (2024) 252, 116886.

5. Presentations at national and international Conferences:

1. **D. Avram**, B. Cojocaru, N. Gheorghe, C. Tiseanu "Cubic and low symmetry centers in Eu^{3+} and Sm^{3+} doped CeO_2 nanoparticles. Effects of dopant concentration and thermal treatment" XI International Krutyn Summer School 2012, Krutyn, Poland, 23-29.09.2012 (Poster presentation)
2. **D. Avram**, B. Cojocaru, M. Florea, C. Tiseanu "Cubic and low symmetry of Eu^{3+} doped CeO_2 nanoparticles: micro-Raman and luminescence spectroscopic study" 12th National Seminar of nanoscience and nanotechnology, The Romanian Academy Library, Bucharest, 16.05.2013 (Poster presentation)
3. **D. Avram**, C. Tiseanu "Cubic and low symmetry centres in Eu^{3+}/Sm^{3+} doped CeO_2 nanoparticles: a micro-Raman and luminescence spectroscopic study" Bucharest University Faculty of Physics 2013 Meeting, Bucharest, 21.06.2013 (Oral presentation)
4. **D. Avram**, C. Tiseanu "IR, NIR and Vis to NIR and Vis up - Conversion Emission in Er doped BiOCl" JUNIOR EUROMAT 2014, Lausanne, Switzerland, 21-25.07.2014 (poster presentation)
5. **D. Avram**, C. Tiseanu "Infrared and Near-Infrared to Visible and Near-Infrared up-conversion emission of Yb - Ln (Ln= Er, Tm) co-doped CeO_2 nanoparticles for biological applications" The 4th International Colloquium 'Physics of Materials' - PM-4, Bucharest, Romania, 13-14.11.2014 (Oral presentation)
6. **D. Avram**, B. Cojocaru, M. Florea, V. Parvulescu, C. Tiseanu "Luminescence properties of CeO_2 doped with Ln ions under optical and X-ray excitation modes," The 4th International Conference on the Physics of Optical Materials and Devices, ICOM 2015, 31 August - 04.09.2015, Budva, Montenegro; Book of Abstracts, ISBN: 978-86-7306-134-4, p. 53, presentation S9-O30-165 (Oral presentation)
7. **D. Avram**, B. Cojocaru, M. Florea, I. Porosnicu, V. Parvulescu, and C. Tiseanu, "Role of defects in shaping the emission of Ln doped CeO_2," 2016 International Conference on Defects in Insulating Materials (ICDIM 2016)", 10-15.07.2016, Lyon, France; presentation Th-P-16 (Poster presentation).
8. **D. Avram**, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "X-ray and pulsed Near-Infrared optical excitation of luminescence in Er doped Y_2O_3 and Lu_2O_3 Nanoparticles for Bio-imaging Applications" IONS Balvanyos 2017 Conference, 25-28 July 2017, Balvanyos, Romania (Poster presentation)
9. **D. Avram**, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "X-ray and Near-Infrared Excitation of Luminescence in Ln doped Nanoparticles for Bio-imaging Applications", SHIFT 2017 (**S**pectral s**H**ap**I**ng For biomedical and energy applica**T**ions), 12 – 17.11.2017, Costa de Adeje, Spain (Poster presentation)

10. **D. Avram**, C. Colbea, A. Broasca, I. Tiseanu, M. Florea, C. Tiseanu "Phase-tuning of Er doped ZrO_2 and correlation with upconversion emission properties" ICOM 2018 (The 5th International Conference on the Physics of Optical Materials and Devices), 27-31.08.2018, Igalo, Montenegro. (Poster presentation)
11. **D. Avram**, I. Tiseanu, M. Florea, C. Tiseanu, C;"X-RAY AND NEAR-INFRARED EXCITED UP-CONVERSION EMISSION PROPERTIES OF Er DOPED SESQUIOXIDES NANOPARTICLES" ICOM 2018 (The 5th International Conference on the Physics of Optical Materials and Devices), 27-31.08.2018, Igalo, Montenegro. (Poster presentation),
12. **D. Avram**, C. Colbea, M. Florea and C. Tiseanu "The effects of local symmetry on the up-conversion emission intensity, color and dynamics under ns pulsed excitation" 8th International Workshops on Photoluminescence of Rare-Earth: Photonic Materials and Applications (PRE'19), 4-6.09.2019, Nice, France (Poster presentation)
13. **D. Avram**, C. Colbea, C. Tiseanu "Local symmetry effects on the upconversion emission intensity, shape and mechanisms under pulsed excitation" UPCONline 2021, 09 - 09.04.2021, Online Conference. (Oral presentation)
14. **D. Avram**, I. Porosnicu, A. Patrascu, C. Tiseanu "Thermal imaging using lifetime thermometry by monitoring both the rise and decay time" Third International Conference on Phosphor Thermometry (ICPT 2022), Magdeburg, Germany, 18 - 20.07.2022.
15. **D. Avram**, C. Colbea, A. Patrascu, C. Tiseanu "Upconversion emission properties in transition metal, lanthanide co-doped systems: a spectral selective, time-resolved investigation", Spectral sHapIng For biomedical and energy applicaTions International Conference (SHIFT 2022) 10-14.10.2022, La Laguna, Spain (Oral Presentation).
16. **D. Avram**, C. Colbea, A. Patrascu, I. Dinca, C. Tiseanu „TIME-RESOLVED UPCONVERSION EMISSION PROPERTIES IN TRANSITIONAL METAL AND LANTHANIDE CO-DOPED SYSTEMS", 21st International Balkan Workshop on Applied Physics and Materials Science (IBWAP 2023) 11-14.07.2023, Constanta, Romania (Poster Presentation).

6. Awards:

1. **D. Avram**, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "X-ray and pulsed Near-Infrared optical excitation of luminescence in Er doped Y_2O_3 and Lu_2O_3 Nanoparticles for Bio-imaging Applications" IONS Balvanyos 2017 Conference, 25-28.072017, Balvanyos, Romania (Awarded best poster presentation, second place)
2. **D. Avram**, B. Cojocaru, I. Tiseanu, M. Florea, C. Tiseanu "X-ray and Near-Infrared Excitation of Luminescence in Ln doped Nanoparticles for Bio-imaging Applications", SHIFT 2017 (**S**pectral s**H**ap**I**ng For biomedical and energy applica**T**ions), 12 – 17.11.2017, Costa de Adeje, Spain (Awarded Poster prize (special mention) offered by J Mater Chem B, Royal Society of Chemistry)
3. **D. Avram**, C. Colbea, M. Florea and C. Tiseanu "The effects of local symmetry on the up-conversion emission intensity, color and dynamics under ns pulsed excitation" 8th International Workshops on Photoluminescence of Rare-Earth: Photonic Materials and Applications (PRE'19), 4-6.09.2019, Nice, France (Awarded 2nd Prize for Poster presentation)