

## 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)

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### 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 - present	Phd in Physics Student

### 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 Fluorescence 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 - present	Scientific Researcher

### 4. Publications in peer reviewed journals:

1. C. Tiseanu, B. Cojocaru, **D. Avram**, V. Parvulescu, M. Sanchez Dominguez "[Isolated versus Sm<sup>3+</sup>-defect associations in CeO<sub>2</sub>: 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<sup>3+</sup> - 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<sub>2</sub>-ZrO<sub>2</sub>: 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<sub>2</sub>- ZrO<sub>2</sub> 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<sup>3+</sup> 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<sub>2</sub> 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<sub>2</sub> under 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<sub>2</sub>O<sub>3</sub>: case of S<sub>6</sub> 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<sub>2</sub> 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<sub>2</sub> and Ho, Yb-CeO<sub>2</sub> 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<sub>2</sub>](#)" *Sci. Rep.* **7**(1) 9598 (2017)
16. I. Porosnicu, **D. Avram**, B. Cojocaru, M. Florea, C. Tiseanu "[Up-conversion luminescence of Er \(Yb\)-CeO<sub>2</sub>: 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<sub>2</sub>O<sub>3</sub>S 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. Seisenbaeva, C. Tiseanu, "[Full Tetragonal Phase Stabilization in ZrO<sub>2</sub> 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<sub>2</sub>O<sub>3</sub>](#)" *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<sub>2</sub>](#)." *Materials Research Bulletin* (2021), 134, 111091.
28. **D. Avram**, A. A. Patrascu, M. C. Istrate, B. Cojocaru, C. Tiseanu, "[Lanthanide doped TiO<sub>2</sub>: 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<sub>2</sub> 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.

## 5. Presentations at national and international Conferences:

1. **D. Avram**, B. Cojocaru, N. Gheorghe, C. Tiseanu "Cubic and low symmetry centers in  $\text{Eu}^{3+}$  and  $\text{Sm}^{3+}$  doped  $\text{CeO}_2$  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  $\text{Eu}^{3+}$  doped  $\text{CeO}_2$  nanoparticles: micro-Raman and luminescence spectroscopic study" [12<sup>th</sup> 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  $\text{Eu}^{3+}/\text{Sm}^{3+}$  doped  $\text{CeO}_2$  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  $\text{BiOCl}$ " [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  $\text{CeO}_2$  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  $\text{CeO}_2$  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  $\text{CeO}_2$ ," 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  $\text{Y}_2\text{O}_3$  and  $\text{Lu}_2\text{O}_3$  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 \(Spectral sHapIng For biomedical and energy applicaTions\)](#), 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  $\text{ZrO}_2$  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" [8<sup>th</sup> 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)

## 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 \(Spectral sHapIng For biomedical and energy applicaTions\)](#), 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" [8<sup>th</sup> 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](#))