

PERSONAL INFORMATION



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Sex M | | Nationality Romanian

WORK EXPERIENCE

- 2019 – to date Vice-dean, Professor, Transilvania University of Braşov, Eroilor 29 Street, 500036 Braşov, Romania
- 2013 – 2019 Associate Professor, Transilvania University of Braşov, Eroilor 29 Street, 500036 Braşov, Romania
- 2007 - 2013 Lecturer, Transilvania University of Braşov, Eroilor 29 Street, 500036 Braşov, Romania

EDUCATION AND TRAINING

- 2018 Habilitat In Environmental Engineering, Technical Univeristy of Cluj
- 2010 – 2013 Postdoctoral Studies, Transilvania University of Braşov
- 2012 4 months – University of Basel, Switzerland
- 2003 – 2007 Ph.D. Material Science and Engineering, Transilvania University of Braşov
- 2003 – 2005 Master in Project Engineering and Renewable Energy Management, Transilvania University of Braşov, Romania
- 2003 4 months – Technical University of Delft, the Netherland
- 2002 – 2003 National Centre for Scientific Research, Grenoble, France
- 1999 – 2003 Graduated from West University of Timisoara (Romania), Faculty of Physics (Physics and Chemistry)

Mother tongue(s) Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	C1	C1
French	C1	C1	B1	B1	B1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

PERSONAL SKILLS

RESEARCH INTEREST

- (1) Wasterwater and air decontamination using advanced oxidation method based on photocatalytic related processes; sustainable decontamination technologies; renewable energy sources with low pollutant impact.
- (2) Nanomaterials environmental impact; biotechnologies compatibility with inorganic nanomaterials;
- (3) Materials engineering: hybrid and tandem structures of nano and mezzo materials based on ceramics/semiconductors, tailoring the materials properties using dopants, thin films deposition of complex semiconductor structures with suitable position of the energetic levels.
- (4) Physical-chemistry: opto-electric properties and surface science: morphology/topography characterisation (AFM, SEM), surface energy, crystalline structure and crystallite size (XRD), elemental characterisation (EDX), optical spectroscopy (UV-VIS-NIR-IR), optoelectronic characterisation (I-V, Photocurrent, IPCE), advanced electrical characterization (Impedance, Mott-Schottky), for thin film with complex structures (hybrid, tandem) and various application – photovoltaics, hydrogen technology wastewater treatment.
- (5) Solar energy conversion: hydrogen production via photoelectrolysis (patent on a new photoelectrochemical cell), photovoltaic conversion (patent on a new device for measuring the opto-electric properties).

EVALUATOR EXPERIENCE

Since 2012 UEFICDI Expert evaluator;
 Since 2010 Expert evaluator for research and development institutes, National Agency for Scientific Research
 Since 2008 International Scientific Evaluator for Hong-Kong region

RESEARCH PROJECT
MANAGEMENT
PROJECT LEADER

2013 – with Tokyo Univerisity (Japan) – New one-dimensional and two-dimensional photocatalyst based on metal oxide semiconductors
 2009-2011 Deposition, characterization, tailoring and optimization of nano and mezo-structured tin oxide (SnO₂) photocatalyst films with controlled morphology – ID 753, CNCS
 2005-2007 Developing and testing new oxides nanostructured materials for hydrogen production by photoelectrolysis – Td 291, CNCS

RESEARCH PROJECT MEMBER OF RESEARCH TEAM

2019 – 2022 Theoretical and Experimental Study of Transition Metal Oxyhydride Nanomaterials for superconductivity and photocatalysis, ERANET-M.-TESTIMONIES

2016 – 2018 Sustainable autonomous system for nitrites/nitrates and heavy metals monitoring of natural water sources, M-ERA.NET-WaterSafe

2014 – 2017 Innovative integrated system Materials – Technology – Equipment for simultaneously photocatalytic and adsorbance processes in wastewater treatment, PNII 217, 2014 – 2016.

2014-2017 Sustainable innovative system for photocatalytic self- decontamination protective equipments CBRN, PNII 282,.

2012-2015 Efficient solar-thermal systems with high acceptance for implementation in urban environment, PNII 28, 2012 – 2015.

2012-2015 High surface complex photoactive nanomaterials for ecologic energy production and organic pollutants degradation, PNII 162, 2012-2015.

2008- 2011 Independent monitoring station with application in photovoltaic and environmental protection domains, PN-II Partnership.

2009-2011 Modelling the ionic conduction in absorber and at absorber/buffer layer interface to enhance the efficiency of solid state solar cells, ID840.

2008-2011 New technologies for nano materials with low environmental impact-TECNANOECO, PN-II Partnership, 72-184.

2006-2008 Research on increasing the photovoltaic conversion in solid state solar cells, CNCSIS, A400.

2006-2008 Multifunctional materials for solar thermal efficient conversion MATSOL-T, CEEX, 277/2006, Modul 1.

2006-2008 Integrated conversion systems for renewable energy sources, CEEX, 226, Modul 1.

2006-2008 Product design for sustainable development, CNCSIS Platforme, 14.

2006-2008 Method and installation for chlorine production and utilization for water chlorination by direct pipeline injection, CEEX, Modul 1.

2007-2010 Photocatalytic materials for pollutants removal from the wastewater resulted in the textile industry FOTOCOMPLEX, PNII - 71-047.

2007-2010 Wood and polymer composites with nanostructures materials additives and nanosensors for improving the microclimate quality NANOPROTECT, PNII 31-014.

2005-2007 Promoting and supporting the Romanian research integration in the field of new and renewable energy sources – Combustion fuel and Hydrogen European Technological Platform – PRORES, CEEX, Modul 3, nr.139.

2005-2008 Sustainable energy for high school education - an European training tool, Comenius, 226362-CP-1-2005-1-RO-COMENIUS-C21, SEE - Eu Tool.

2002-2005 Renewable Energy Systems and Environment Management ICT Tools, Leonardo da Vinci, Pilot project, RO/02/B/F/PP 141026, RES&EM ICT Tools.

EDITORIAL RESPONSABILITIES

Member of the Editorial Board of: American Journal of Applied Chemistry;

Scientific reviewer for: Thin Solid Films, Chemical Engineering Journal, Applied Surface Science, Catalysis Today, Material Science and Engineering B, ChemCatChem, Comptes Rendus Chimie, Catalysis Science & Technology, Dalton Transactions, Journal of Hazardous Materials, Journal of Physics and Chemistry of Solids, New Journal of Chemistry, Optik - International Journal for Light and Electron Optics, RSC Advances, Solar EnergyAdvanced Materials, Journal of Molecular Catalysis A: Chemical, Journal of Water Process Engineering, International Journal of Hydrogen Energy, Industrial & Engineering Chemistry Research, Materials Science in Semiconductor Processing, Optical Materials, American Journal of Nanoscience and Nanotechnology, Nanoscale.

AWARDS AND PRIZES

Prize for research activity, Transilvania University of Braşov (2007) ;

Prize for patents, Transilvania University of Braşov (2010);

MEMBER OF PROFESSIONAL ASSOCIATIONS

Founder member of Romanian Hydrogen Energy Society.

ADDITIONAL INFORMATION

Publications	Over 60 publications in peer-reviewed journals, books and chapters of books
Presentations	Over 20 oral presentation in conferences
Patents	3 patents : Device for producing hydrogen and oxygen by photoelectrolysis with sensors for monitoring the photoelectrolysis process parameters, Numar Patent: RO125540; Device for determining the optoelectric properties of materials, Numar Patent: RO126234-A0; MODULAR SOLAR THERMAL COLLECTOR FOR OPTIMIZING CONVERSION EFFICIENCY BY TESTING AND INCREASING ARCHITECTURAL ACCEPTANCE, RO130275-A0.

ANNEXES

PAPERS PUBLISHED IN ISI THOMSON JOURNALS, WEB OF SCIENCE

Articole publicate în reviste internaționale cotate/indexate ISI

- [1] A. Enesca, C. Cazan, Volatile Organic Compounds (VOCs) Removal from Indoor Air by Heterostructures/Composites/Doped Photocatalysts: A Mini-Review, *Nanomaterials*, 10, 1965, 2020.
- [2] A. Enesca, L. Andronic, The Influence of Photoactive Heterostructures on the Photocatalytic Removal of Dyes and Pharmaceutical Active Compounds: A Mini-Review, *Nanomaterials*, 10, 1766, 2020.
- [3] A. Enesca, L. Isac, The Influence of Light Irradiation on the Photocatalytic Degradation of Organic Pollutants, *Materials*, 13, 2494, 2020.
- [4] I. Serban, A. Enesca, Metal Oxides-Based Semiconductors for Biosensors Applications, *Frontiers in Chemistry*, vol. 8, 354, 2020.
- [5] L. Isac, L. Andronic, M. Visa, A. Enesca, Selective photocatalytic degradation of organic pollutants by $\text{Cu}_x\text{S}/\text{ZnO}/\text{TiO}_2$ heterostructures, *Ceramics International*, vol. 46, p. 4265 – 4273, 2020.
- [6] L. Isac, C. Cazan, A. Enesca, L. Andronic, Copper sulfide based heterojunctions as photocatalysts for dyes photodegradation, *Frontiers in Chemistry*, vol. 7, nr. 694, 2019.
- [7] A. Duta, L. Andronic, A. Enesca, The influence of low irradiance and electrolytes on the mineralization efficiency of organic pollutants using the Vis-active photocatalytic tandem $\text{CuInS}_2/\text{TiO}_2/\text{SnO}_2$, *Catalysis Today*, vol. 300, p. 18 – 27, 2018.
- [8] C. Mihoreanu, A. Banciu, A. Enesca, A. Duta, Silica based thin films for self-cleaning applications in solar energy converters, *Journal of Energy Engineering – ASCE*, vol. 143, 04017029, 2017.
- [9] C. Mihoreanu, A. Enesca, A. Duta, $\text{SiO}_2/\text{TiO}_2$ Multilayered thin films with self-cleaning and enhanced optical properties, *Bulletin of Materials Science*, vol. 10, p. 473-485, 2017.
- [10] A. Enesca, Y. Yamaguchi, C. Terashima, A. Fujishima, K. Nakata, A. Duta, Enhanced UV-Vis photocatalytic performance of the $\text{CuInS}_2/\text{TiO}_2/\text{SnO}_2$ heterostructure for air decontamination, *Journal of Catalysis*, vol. 350, p. 174–181, 2017.
- [11] L. Isac, R. Panait, A. Enesca, D. Perniu, A. Duta, Alumina matrix with controlled morphology for colored spectrally selective coatings, *Environmental Engineering and Management Journal*, vol. 16, p. 715 – 724, 2017.
- [12] M. Visa, L. Andronic, A. Enesca, Behavior of the new composites obtained from fly ash and titanium dioxide in removing of the pollutants from wastewater, *Applied Surface Science*, Volume 388, Dec. 2016, Pages 359-369.
- [13] A. Enesca, M. Baneto, D. Perniu, L. Isac, C. Bogatu, A. Duta, Solar-activated tandem thin films based on CuInS_2 , TiO_2 and SnO_2 in optimized wastewater treatment processes, *Applied Catalysis B: Environmental*, Volume 186, 5 June 2016, Pages 69-76
- [14] A. Duta, A. Enesca, C. Bogatu, E. Gyorgy, Solar-active photocatalytic tandems. A compromise in the photocatalytic processes design, *Materials Science in Semiconductor Processing*, Volume 42, Part 1, February 2016, Pages 94-97.
- [15] M. Baneto, A. Enesca, C. Mihoreanu, Y. Lare, K. Jondo, K. Napo, A. Duta, Effects of the growth temperature on the properties of spray deposited CuInS_2 thin films for photovoltaic applications, *Ceramics International*, Volume 41, Issue 3, Part B, April 2015, Pages 4742-4749. [16] Y. Mouchaal, A. Enesca, C. Mihoreanu, A. Khellil, A. Duta, Tuning the opto-electrical properties of SnO_2 thin films by Ag+ and In+3 co-doping, *Materials Science and Engineering B*, 199, p. 22–29, 2015.
- [17] A. Enesca, L. Isac, A. Duta, Charge carriers injection in tandem semiconductors for dyes mineralization, *Applied Catalysis B: Environmental*, 162, p. 352–363, 2015.
- [18] Andronic, Luminita; Enesca, Alexandru; Cazan, Cristina; Visa, Maria, TiO_2 -active carbon composites for wastewater photocatalysis, *Journal Of Sol-Gel Science And Technology*, vol. 71 (3), 396-405, 2014.
- [19] L. Duta, C. Popescu, A. Popescu, M. Motoc, C. Logofatu, A. Enesca, A. Duta, E. Gyorgy, Nitrogen-doped and gold-loaded TiO_2 photocatalysts synthesized by sequential reactive pulsed laser deposition, *Applied Physics A*, vol. 117, p. 97-101, 2014.
- [20] M. Baneto, A. Enesca, Y. Lare, K. Jondo, K. Napo, A. Duta, Effect of precursor concentration on structural, morphological and opto-electric properties of ZnO thin films prepared by spray pyrolysis, *Ceramics International*, 40, p. 8397 – 8404, 2014.
- [21] A. Enesca, L. Isac, L. Andronic, D. Perniu, A. Duta, Tuning SnO_2 – TiO_2 tandem systems for dyes mineralization, *Applied Catalysis B: Environmental*, 147, p. 175 – 184, 2014.
- [22] A. Enesca, L. Isac, A. Duta, Hybrid structure comprised of SnO_2 , ZnO and Cu_2S thin film semiconductors with controlled optoelectric and photocatalytic properties, *Thin Solid Films*, vol. 542, p. 31-37, 2013.
- [23] L. Isac, L. Andronic, A. Enesca, A. Duta, Copper sulfide films obtained by spray pyrolysis for dyes photodegradation under visible light irradiation, *Journal of Photochemistry and Photobiology A*, vol. 252, p. 53– 59, 2013.
- [24] A. Enesca, A. Duta, The influence of selective doping ions (Na^+ , Ta^{5+}) on the optoelectronic properties of WO_3 thin films, *Applied Physics A*, vol. 111, p. 639-643, 2013.
- [25] L. Bertus, A. Enesca, A. Duta, Influence of spray pyrolysis deposition parameters on the optoelectronic properties of WO_3 thin films, *Thin Solid Films*, vol. 520, p. 4282-4290, 2012.
- [26] A. Enesca, L. Andronic, A. Duta, Optimization of Opto-Electrical and Photocatalytic Properties of SnO_2 Thin Films Using Zn^{2+} and W^{6+} Dopant Ions, *Catalysis Letters*, Vol. 142, p. 224-230, 2012.
- [27] A. Enesca, L. Andronic, A. Duta, The influence of surfactants on the crystalline structure, electrical and photocatalytic properties of hybrid multi-structured (SnO_2 , TiO_2 and WO_3) thin films, *Applied Surface Science*, Vol. 258, p. 4339-4346, 2012.
- [28] Dudita, M; Bogatu, C; Enesca, A; Duta, A, Thin Films Of SnO_2 Obtained Electrochemically From Surfactants Containing Electrolytes, *Revue Roumaine De Chimie*, vol. 56 (7), 717-723, 2011
- [29] A. Enesca, Influence of precursor composition on optoelectric and photocatalytic properties of TiO_2 and WO_3 film, *Environmental Engineering and Management Journal*, Vol. 10(8), p. 1191-1196, 2011.
- [30] L. Isac, I. Popovici, A. Enesca, A. Duta, Copper sulfides thin films with controlled properties for photovoltaic cells, *Environmental Engineering and Management Journal*, Vol. 10(9), p. 1235-1241, 2011.

- [31] L. Andronic, D. Andrasi, A. Enesca, M. Visa, A. Duta, The influence of titanium dioxide phase composition on dyes photocatalysis, *Journal of sol-gel science and technology*, Vol. 58 (1), p. 201-208, 2011.
- [32] A. Enesca, A. Duta, The influence of organic additives on the morphologic and crystalline properties of SnO₂ obtained by spray pyrolysis deposition, *Thin Solid Films*, Vol. 519 (17), p. 5780-5786, 2011.
- [33] M. Dudita, C. Bogatu, A. Enesca, A. Duta, The influence of the additives composition and concentration on the properties of SnO_x thin films used in photocatalysis, *Materials Letters*, Vol. 65 (14), p. 2185-2189, 2011.
- [34] A. Enesca, C. Bogatu, M. Voinea, A. Duta, Opto-electronic properties of SnO₂ layers obtained by SPD and ECD techniques, *Thin Solid Films*, Vol. 519 (2), p. 563-567, 2010.
- [35] A. Enesca, A. Duță, The influence of the precursor concentration on the properties of SnO₂ thin films, *Thin Solid Films*, Volume 519 (2), p. 568-572, 2010.
- [36] L. Isac, I. Popovici, A. Enesca, A. Duta, Copper sulfide (image) thin films as possible image-type absorbers in 3D solar cells, *Energy Procedia*, Volume 2 (1), p. 71-78, 2010.
- [37] A. Enesca, M. Comsit, I. Visa, A. Duta, Photovoltaic Efficiency of a Grid Connected 10 kWp System Implemented in the Brasov Area, *Book Series: Proceedings of the International Conference on Optimization of Electrical and Electronic Equipment*, p. 1146-1151, 2010.
- [38] A. Enesca, L. Andronic, A. Duta, Influence of sodium ions (Na⁺) dopant on the efficiency of the tungsten, *Revue Roumain de Chimie*, Vol. 55 (1), p. 11-15, 2010.
- [39] A. Enesca, L. Andronic, A. Duta, "Wastewater Treatment Using Optimized TiO₂ Photocatalytic Properties", *Environmental Engineering and Management Journal*, Vol.8, No.4, p. 753-758, 2009.
- [40] L. Andronic, A. Enesca, C. Vladuta, A. Duta, „Photocatalytic activity of cadmium doped TiO₂ films for photocatalytic degradation of dyes”, *Chemical Engineering Journal*, 152, p. 64-71, 2009.
- [41] L. Andronic, B. Hristache, A. Enesca, M. Visa, A. Duta, „Studies on titanium oxide catalyst doped with heavy metals (cadmium, copper and nickel)”, *Environmental Engineering and Management Journal*, Vol. 8(4), p. 747-751, 2009.
- [42] M. Visa, A. Enesca, A. Duta, Simultaneous Adsorption of Methyl Orange and Heavy Metals from Solution Using Fly Ash, *Advanced Materials Research*, Vol. 79-82, p. 247-250, 2009.
- [43] A. Duta, A. Enesca, L. Andronic, Tailoring Photocatalytic Properties of Tungsten Oxide Thin Films, *Advanced Materials Research*, vol. 79-82, p. 847-850, 2009.
- [44] A. Enesca, A. Duta, J. Schoonman, "Influence of tantalum ions (Ta⁵⁺) dopants on the efficiency of the tungsten trioxide photoelectrode", *Physica Status Solidi a*, 205, 8, p. 2038-2041, 2008.
- [45] A. Enesca, A. Duta, "Tailoring WO₃ thin layer using spray pyrolysis deposition", *Physica Status Solidi c*, 5, 11, p. 3499-3502, 2008.
- [46] M. Mihaly, I. Lacatusu, A. Enesca, A. Meghea, "Hydride nanomaterials based on silica coated C60 clusters obtained by microemulsion technique", *Molecular Crystals and Liquid Crystals*, 483, p. 205-215, 2008.
- [47] I. Lacatusu, M. Mihaly, A. Enesca, A. Meghea, "Fe₂O₃ nanoparticles coated in a SiO₂ shell by microemulsion method, *Molecular Crystals and Liquid Crystals*, 483, p. 228-236, 2008.
- [48] A. Enesca, A. Duta, S. Manolache, „The influence of defects on the conduction in photoelectrodes used for water splitting”, *Journal of Optoelectronics and Advanced Materials*, 9, 6, 2007.
- [49] S.A. Manolache, Andronic L., A. Duta, A. Enesca, "The Influence of Deposition Condition on Crystal Growth of CuSbS₂ Thin Film Absorber Used For Solid State Solar Cells (SSSC)", *Journal of Optoelectronics and Advanced Materials*, 9, 5, p. 1269-1272, 2007.
- [50] A. Enesca, A. Duta, J. Schoonman, "Study of photoactivity of tungsten trioxide (WO₃) for water splitting", *Thin Solid Films*, 515, p. 6371-6374, 2007.
- [51] A. Enesca, L. Andronic, S. Manolache, A. Duta, „Optical properties and chemical stability of WO₃ and TiO₂ thin films photocatalyst”, *Romanian Journal of Information Science and Technology*, 10, 3, p. 269-277, 2007.
- [52] A. Enesca, A. Duta, L. Isac, S. Manolache, J. Schoonman, The influence of the annealing process on the properties of WO₃ photoelectrode used in a photoelectrochemical cell (PECC), *Journal of Physics Conference Series*, Vol. 61, p. 472-476, 2007.
- [53] L. Isac, A. Duta, A. Kriza, A. Enesca, M. Nanu, The growth of CuS thin films by Spray Pyrolysis, *Journal of Physics Conference Series*, Vol. 61, p. 477-481, 2007.
- [54] A. Enesca, C. Enache, A. Duta, J. Schoonman, "High crystalline tungsten trioxide thin layer obtained by SPD technique", *Journal of the European Ceramic Society*, 26, p. 571-576, 2006.
- [55] A. Enesca, L. Andronic, S. Manolache, A. Duta, „ Investigation of WO₃ and TiO₂ thin films used in photocatalysis”, *International Semiconductor Conference, Sinaia, Romania, Book of proceeding*, vol. 2, p. 241-244, IEEE proceedings: BFM58, ISBN: 1-4244-0109-7, 2006.
- [56] A. Enesca, A. Duta, M. Nanu, C. Enache, R. van der Krol, J. Schoonman, "Photoelectrode materials of tungsten oxide (WO₃) for water splitting", *International Semiconductor Conference, Sinaia, Romania, Book of proceeding*, vol. 2 p.293-297, IEEE proceedings: 05TH8818, ISBN: 0-7803-9214-0, Library of Congress: 2005925118, 2005.
- [57] A. Duta, I. Visa, S.A. Manolache, A. Enesca, L. Andronic, G.R. Calin, "Nanostructured TiO₂ for Solar Energy Conversion", *International Semiconductor Conference, Sinaia, Romania, Book of proceeding*, vol. 2 p.267-270, IEEE Catalog number: 05TH8818, ISBN: 0-7803-9214-0, Library of Congress: 2005925118, 2005.

PUBLISHED BOOKS AND CHAPTERS IN BOOKS

- [1] Sustainable Energy in the Built Environment-Steps Towards nZEB, Editura Springer International (Elvetia), ISBN 978-3-319-09707-7, Contributii la capitolele: Spectrally solar Selective Coatings for Colored Flat Plate Solar Thermal Collectors si Thin Film Vis-Active Photocatalysts for Up-Scaled Wastewater Treatment, 2014.
- [2] Chemistry, Transilvania University Ed., ISBN: 978-973-598-630-8, 2009.
- [3] Monography: **, Sustainable Energy, Transilvania University Ed., Editors: Ion Visa, Anca Duta, ISBN 978-973-598-454-0, Hydrogen tehnology Chapter, 2008.
- [4] Monography: **, Basics of Renewable Energy Systems, Transilvania University Ed., Editors: Ion Visa, Anca Duta, ISBN 9736355411, Hydrogen tehnology Chapter, 2005.

PATENTS

1. Device for producing hydrogen and oxygen by photoelectrolysis with sensors for monitoring the photoelectrolysis process parameters, Nb: RO125540-A2 Authors: Duta-Capra A., Enesca A., Jaliu C., Visa I., 2010
2. Device for determining optoelectric properties of materials, Nb: RO126234-A0 Authors: Enesca A., Duta A., Visa I., 2011
3. MODULAR SOLAR THERMAL COLLECTOR FOR OPTIMIZING CONVERSION EFFICIENCY BY TESTING AND INCREASING ARCHITECTURAL ACCEPTANCE, VISA I, COMSIT M, DUTA-CAPRA A, NEAGOE M, SAULESCU R G, CIOBANU D, MOLDOVAN M D, BURDUHOS B, PERNIU D, ENESCA I, ISAC L, MIHOREANU C, IENEI E, TOTU I, Numar patent: RO130275-A0, 2015.