



# Europass Curriculum Vitae

## Personal information

First name(s) / Surname(s)

Address(es)

Telephone(s)

Fax(es)

E-mail

Nationality

Date of birth

Gender

**CARCADEA Elena**

60 Calea lui Traian Street, 240107 – Ramnicu Valcea, VL, ROMANIA

+4-0350-414095; +4-0250-732744

+4-0250-732746

elena.carcadea@icsi.ro

Romanian

-

Female

## Occupational field

### Work experience

Dates

Occupation or position held

Main activities and responsibilities

Name and address of employer

Type of business or sector

### Academic (research)

**march 2017-present**

**Coordinator of ICSI Energy (former National Center for Hydrogen and Fuel Cells)**

Management of research project developed in the NCHFC

Management of human resources

Defining research and development strategy of the centre

Assure the financing funds for the activity – look for various call for projects and develop proposals

**National Research & Development Institute for Cryogenics & Isotopic Technologies – ICSI Rm. Valcea, Uzinei street, no.4, Ramnicu Valcea, Romania**

**Academic research and development**

Dates

Occupation or position held

Main activities and responsibilities

Name and address of employer

Type of business or sector

**september 2016-march 2017**

**Scientific Researcher 1<sup>st</sup> degree**

- Coordinator of Mathematical Modelling Group in the National Centre for Hydrogen and Fuel Cells
- Manager and scientific responsible of national projects

**ICSI Rm. Valcea, National Centre for Hydrogen and Fuel Cell, Uzinei street, no.4, Rm. Valcea, RO**

**Academic research and development**

Dates

Occupation or position held

Main activities and responsibilities

Name and address of employer

Type of business or sector

**2009 – august 2016**

**Scientific Researcher 2<sup>nd</sup> degree**

- Coordinator of Mathematical Modelling Group in the National Centre for Hydrogen and Fuel Cells
- Manager and scientific responsible of national projects
- Mathematical modeling of fluid dynamics in porous media for membrane reactors and fuel cells
- CFD analyses with Fluent (6.2.16, 6.3), PEM Fuel Cell Module and COMSOL Multiphysics 4.2
- Research regarding PEM fuel cell development: fluid flow analysis and mathematical modeling

**ICSI Rm. Valcea, National Centre for Hydrogen and Fuel Cell, Uzinei street, no.4, Rm. Valcea, RO**

**Academic research and development**

Dates

Occupation or position held

Main activities and responsibilities

Name and address of employer

Type of business or sector

**2006 - 2009**

**Scientific Researcher 3<sup>rd</sup> degree**

- Mathematical modelling of fluid dynamics in a porous medium;
- Applied research in the field of proton exchange membrane fuel cells
- Fluid dynamics and mathematical modelling studies for fuel cell systems for increased performance

**ICSI Rm. Valcea, Uzinei street, no.4, Rm. Valcea, RO**

**Research & Development**

Dates	2004 - 2006
Occupation or position held	<b>Scientific Researcher</b>
Main activities and responsibilities	<ul style="list-style-type: none"> <li>▪ Software programming in Visual Basic, Arc GIS 8.1.2, Borland C++, Turbo Pascal</li> <li>▪ Fellowship to Leeds University, UK, for improving the skills in fluid dynamics modelling for fuel cells. Training for using Fluent software and the pre-processor Gambit for fluid flow modelling in a fuel cell assembly.</li> </ul>
Name and address of employer	<b>ICSI Rm. Valcea, Uzinei street, no.4, Rm. Valcea, RO</b>
Type of business or sector	<b>Research &amp; Development</b>
<hr/>	
Dates	1997-2004
Occupation or position held	<b>Matematician</b>
Main activities and responsibilities	<ul style="list-style-type: none"> <li>▪ Research activities in the field of reliability and risk assessment for industrial plants (e.g. heavy water plants, cryogenics installations);</li> <li>▪ Studies regarding the impact of industrial activities on the environment;</li> <li>▪ Drawing digital maps; GIS analyses;</li> <li>▪ Participation to writing and implementing quality assurance system in ICIT Rm. Valcea</li> </ul>
Name and address of employer	<b>ICSI Rm. Valcea, Uzinei street, no.4, Rm. Valcea, RO</b>
Type of business or sector	<b>Research &amp; Development</b>
<hr/>	
<b>Education and training</b>	
Dates	<b>2002 - 2008</b>
Title of qualification awarded	<b>PhD in Mathematics,</b> Title of doctoral thesis Fluid dynamics modeling in porous media. Mathematical Application to fuel cell
Principal subjects/occupational skills covered	Fuel cell development, fluid flow analysis for a single fuel cell and for stacks, mathematical modeling of fluid dynamics in porous media, mathematical modeling of PEM fuel cells
Name and type of organisation providing education and training	<b>Pitesti University, Faculty of Mathematics and Computer science</b>
Level in national or international classification	Level 6 - Second stage of tertiary education
<hr/>	
Dates	<b>January - October 2004</b>
Title of qualification awarded	<b>Training in CFD modeling</b>
Main activities and responsibilities	Modeling of fluid dynamics through porous media Learning the commercial CFD software, Fluent.
Name and address of employer	<b>Leeds University, Leeds LS2 9JT, UK</b>
Type of business or sector	Computational Fluid Dynamics Center
<hr/>	
Dates	<b>1998 – 1999</b>
Title of qualification awarded	<b>Eco-Management Post-universitary degree</b>
Principal subjects/occupational skills covered	Eco-Management Sciences
Name and type of organisation providing education and training	<b>Technical University from Cluj Napoca, Romania in consortium with Minnesota University, SUA</b>
Level in national or international classification	Level 5 - First stage of tertiary education: ISCED 5A
<hr/>	
Dates	october 1992- june 1997
Title of qualification awarded	<b>Bachelor degree</b>
Principal subjects/occupational skills covered	Mathematics and Computer Science
Name and type of organisation providing education and training	<b>Pitesti University, Computer science and Mathematics Faculty</b>
Level in national or international classification	Level 5 - First stage of tertiary education: ISCED 5A

<b>Personal skills and competences</b>																															
Mother tongue(s)	<b>Romanian</b>																														
Other language(s)																															
Self-assessment																															
European level (*)																															
<b>English</b>																															
	<table border="1"> <thead> <tr> <th colspan="4">Understanding</th> <th colspan="4">Speaking</th> <th colspan="2">Writing</th> </tr> <tr> <th colspan="2">Listening</th> <th colspan="2">Reading</th> <th colspan="2">Spoken interaction</th> <th colspan="2">Spoken production</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> <td>C1</td> <td>Proficient user</td> </tr> </tbody> </table>	Understanding				Speaking				Writing		Listening		Reading		Spoken interaction		Spoken production				C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user
Understanding				Speaking				Writing																							
Listening		Reading		Spoken interaction		Spoken production																									
C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user																						
	(*) <a href="#">Common European Framework of Reference for Languages</a>																														
Social skills and competences	Friendly, Trustworthy, Hard-working, Communicative, Highly organized, Problem solver, Team player – in the expertise area																														
Organisational skills and competences	Competent organizer and coordinator, empathic with colleagues, innovative in projects development																														
Technical skills and competences	Technical skilled in the area of fuel cell and membrane reactor modeling; Projects financial analysis CFD analyses with Fluent (6.3, 12), Fluent PEM Fuel Cell Module and COMSOL Multiphysics 4.2																														
Computer skills and competences	Programming in languages: <i>Visual Basic</i> , ArcView 8.1.2, Borland C++, Turbo Pascal CFD analyses with Fluent (6.3, 12), Fluent PEM Fuel Cell Module and COMSOL Multiphysics 4.2 Operation system: Microsoft Windows XP & Microsoft Windows 7 Productivity suite: Microsoft Office 2003 & 2007; Multimedia software & Internet browsers																														
Other skills and competences	Open-minded, curious and inventive																														
Driving licence	B category																														
<b>Additional information</b>	<b>Marital status:</b> Married; one child																														

## Annex 1: List of relevant published papers

### Published papers indexed by Thomson Reuters Master Journal List (ex-ISI Master Journal List) with impact factor (IF):

1. Carcadea, E., Ismail, M.S., Ingham, D.B., Patularu L., Schitea D., Marinouiu A., Ion-Ebrasu D., Mocanu, D., Varlam, M., (2020), Effects of geometrical dimensions of flow channels of a large-active-area PEM fuel cell: A CFD study, *International Journal of Hydrogen Energy*, Article in Press, doi.org/10.1016/j.ijhydene.2020.08.150, ISSN: 0360-3199, eISSN: 1879-3487, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
2. Nazir Hassan, Louis Cindrella, Jose Sujin, Prakash Jyoti, Muthuswamy Navaneethan, Buan Marthe E. M., Flox Cristina, Chavan Sai, Shi Xuan, Kauranen Pertti, Kallio Tanja, Maia Gilberto, Tammeveski Kaido, Lymperopoulos Nikolaos, **Carcadea Elena**, Veziroglu Emre, Iranzo Alfredo, Kannan Arunachala M., (2020) Is the H-2 economy realizable in the foreseeable future? Part I: H-2 production methods, *International Journal of Hydrogen Energy*, Volume: 45, Issue: 27, Pages: 13777-13788, DOI: 10.1016/j.ijhydene.2020.03.092, Published: MAY 18 2020, ISSN: 0360-3199, eISSN: 1879-3487, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
3. Nazir, H., Muthuswamy, N., Louis, C., Jose, S., Prakash, J., Buan, M.E., ... **Carcadea E.**, Veziroglu E., Iranzo A., Kannan A.M. (2020). Is the H2 economy realizable in the foreseeable future? Part II: H2 storage, transportation, and distribution. *International Journal of Hydrogen Energy*. *International Journal of Hydrogen Energy*, volume 45, issue 41, pages 20693 - 20708, DOI: <https://doi.org/10.1016/j.ijhydene.2020.05.241>, ISSN: 0360-3199, eISSN: 1879-3487, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
4. Nazir, H., Muthuswamy, N., Louis, C., Jose, S., Prakash, J., Buan, M. E., ... .. **Carcadea E.**, Veziroglu E., Iranzo A., & Kannan, A.M. (2020). Is the H2 economy realizable in the foreseeable future? Part III: H2 usage technologies, applications, and challenges and opportunities. *International Journal of Hydrogen Energy*, volume 45, issue 53, pp. 28217 - 28239, ISSN: 0360-3199, eISSN: 1879-3487, doi: 10.1016/j.ijhydene.2020.07.256, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
5. Ion-Ebrasu, D., Pollet, B. G., Caprarescu, S., Chitu, A., Trusca, R., Niculescu, V., **Elena Carcadea**, ... & Vasile, B. S. (2020). Graphene inclusion effect on anion-exchange membranes properties for alkaline water electrolyzers. *International Journal of Hydrogen Energy*, 45(35): 17057-17066, ISSN: 0360-3199, eISSN: 1879-3487, <https://doi.org/10.1016/j.ijhydene.2020.04.195>, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
6. Adriana Marinouiu, Mircea Raceanu, Elena Carcadea, Mindaugas Andrulevicius, Asta Tamuleviciene, Tomas Tamulevicius, Catalin Capris, Mihai Varlam, (2020), Efficient Method to Obtain Platinum–Cobalt Supported on Graphene Oxide and Electrocatalyst Development, *International Journal of Hydrogen Energy*, vol. 45, issue 49, pp. 26226 - 26237, ISSN: 0360-3199, doi.org/10.1016/j.ijhydene.2020.01.170, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England
7. Elena Carcadea, Mihai Varlam, Ismail Mohammed, Derek Binns Ingham, Adriana Marinouiu, Mircea Raceanu, Catalin Jianu, Laurentiu Patularu, Daniela Ion-Ebrasu, 2020, PEM fuel cell performance improvement through numerical optimization of the parameters of the porous

layers, *International Journal of Hydrogen Energy*, 45(14): 7968-7980, ISSN: 0360-3199, eISSN: 1879-3487, doi.org/10.1016/j.ijhydene.2019.08.219, scor relativ de influenta/2019: 1,266; **impact factor/2019: 4,939; Q1** Publisher: Pergamon-Elsevier Science Ltd, England

8. Adriana Marinouiu, Andrulevičius Mindaugas, Tamulevičienė Asta, Tamulevičius Tomas, Elena Carcadea, Mircea Raceanu, Mihai Varlam, **2020**, "High performance catalytic system with enhanced durability in PEM fuel cell", *International Journal of Hydrogen Energy*, 45 (17), pp. 10409-10422, 10.1016/j.ijhydene.2019.09.179, impact factor/2019: 4,939, **Q1**
9. Marinouiu, A., Carcadea E, Sacca A, Carbone, A., Sisu, C., Dogaru, A, Raceanu M,Varlam M, **2020**, One-step synthesis of graphene supported platinum nanoparticles as electrocatalyst for PEM fuel cells, *International Journal of Hydrogen Energy*, 10.1016/j.ijhydene.2020.04.183, Available on line 28 May 2020, ISSN: 0360-3199, impact factor/2019 4,939, **Q1**
10. Alexandru Ciocan, Cosmin Ungureanu, Alin Chitu, Elena Carcadea, George Darie, (**2020**), *Electrical Longboard for Everyday Urban Commuting, Sustainability*, 12(19), 8091, ISSN: 2071-1050, <https://doi.org/10.3390/su12198091>, scor relativ de influenta/2019: 0.620, Impact factor: 2.576, **Q2** MPDI, Switzerland
11. N. Bizon, M. Oproescu, P. Thounthong, M. Varlam, E. Carcadea, M. Culcer, M. Iliescu, M.S. Raboaca, I.S. Sorlei, Improving the Fuel Economy and Battery Lifespan in Fuel Cell/Renewable Hybrid Power Systems Using the Power-Following Control of the Fueling Regulators *Applied Sciences*, vol 10, Article Number: 8310, , ISSN 2076-3417, DOI: 10.3390/app10228310, RIS 0.992, impact factor FI 2,474/2019, **Q2**, Switzerland, MDPI
12. Radu Dorin Andrei, Adriana Marinouiu, Elena Marin, Stanica Enache, Elena Carcadea, Carbon Nanofibers Production via the Electrospinning Process, *Energies*, **2020**, 13(11), 3029; ISSN: eISSN: 1996-1073, doi:10.3390/en13113029, scor relativ de influenta/2019: 0,601; **Impact factor/2019: 2,702; Q3** MPDI, Switzerland
13. Dan-Adrian Mocanu, Viorel Bădescu, Ciprian Bucur, Iuliana Ștefan, Elena Carcadea, Maria Simona Răboacă, Ioana Manta, PLC Automation and Control Strategy in a Stirling Solar Power System, *Energies*, **2020**, 13(8), 1917, <https://doi.org/10.3390/en13081917>, ISSN: eISSN: 1996-1073, scor relativ de influenta/2019: 0,601; **Impact factor/2019: 2,702; Q3** MPDI, Switzerland
14. Adriana Marinouiu, Radu Andrei, Irina Vagner, Violeta Niculescu, Felicia Bucura, Marius Constantinescu, Elena Carcadea, One Step Synthesis of Au Nanoparticles Supported on Graphene Oxide Using an Eco-Friendly Microwave-Assisted Process, *Materials Science-Medziagotyra*, 26(3): 249-254, (**2020**), DOI: <https://doi.org/10.5755/j01.ms.26.3.21857>, ISSN: 1392-1320, scor relativ de influenta/2019: 0,222; **Impact Factor/2019: 0,625; Q3** Kaunas University of Technology, Lithuania
15. Bizon, N, Raceanu, M, Koudoumas, E, Marinouiu, A, Karapidakis, E, Carcadea, E Renewable/Fuel Cell Hybrid Power System Operation Using Two Search Controllers of the Optimal Power Needed on the DC Bus *Energies*, 13 (22), Article Number 6111, DOI: 10.3390/en13226111, **2020**, ISSN: eISSN: 1996-1073, Impact factor: 2.702, **Q3**
16. **Elena Carcadea**, Mihai Varlam, Adriana Marinouiu, Mircea Raceanu, M. S. Ismail, D.B. Ingham, Influence of catalyst structure on PEM fuel cell performance - A numerical investigation, *International Journal of Hydrogen Energy*, 44(25), 12829-12841, ISSN: 0360-3199, (IF 4.229), doi: 10.1016/j.ijhydene.2018.12.155, **Q1**
17. Nicolae Bidica, Ioan Cristescu, **Carcadea Elena**, Anisia Bornea, Ciprian Bucur, Nicolae Sofilca, Alin Lazar, 2019, Modelling synergistic isotope effects of the permeation of multiple hydrogen isotopes through metals *Fusion Engineering and Design*, Vol. 146, 2019, pp. 1938-1941 10.1016/j.fusengdes.2019.03.071, ISSN 1536-1055, FI 1.457, **Q1**
18. Marinouiu A., Raceanu M., **Carcadea E.**, Varlam M., Stefanescu I., Iodinated carbon materials for oxygen reduction reaction in proton exchange membrane fuel cell. Scalable synthesis and electrochemical performances, *Arab J Chem* 2019; 12:868–80. doi:10.1016/j.arabjc.2016.12.002. IF=3.298, **Q2**,
19. Daniela Ion-Ebrasu, Bruno G. Pollet, Adnana Spinu-Zaulet, Amalia Soare, Elena Carcadea, Mihai Varlam, Simona Caprarescu, Graphene Modified Fluorinated Cation-Exchange Membranes for Proton Exchange Membrane Water Electrolysis, *International Journal of Hydrogen Energy*, 44 (2019), 10190-10196, <https://doi.org/10.1016/j.ijhydene.2019.02.148>, 4,084, **Q2**,
20. Felseghi R.-A. Carcadea E., Raboaca M.S, Trufin C.N., Filote, C., Hydrogen fuel cell technology for the sustainable future of stationary applications, *Energies*, Vol. 12, Issue 23, 2019, Article number 4593, 10.3390/en12234593, IF=2.707, **Q3**
21. Marinouiu, Adriana; Cobzaru, Claudia; Carcadea, Elena; Raceanu, Mircea; Schitea, Dorin; Varlam, Mihai; Stefanescu, Ioan., New catalysts used in the hydrogenolysis reaction of glycerol , *Environmental Engineering & Management Journal (EEMJ)*. Jan 2019, Vol. 18 Issue 1, pp 195-202. 8p. , **Q3**
22. **Elena Carcadea**, Mihai Varlam, Derek Ingham, Mohammed Ismail, Laurentiu Patularu, Adriana Marinouiu, Dorin Schitea, 2019, *The effects of cathode flow channel size and operating conditions on PEM fuel performance: a CFD modelling study and experimental demonstration*, *International Journal Of Energy Research*, vol. 42, pg 2789-2804, **2018**, 10.1002/er.4068, **Q1**
23. Adriana Marinouiu, Mircea Raceanu, **Elena Carcadea**, Mihai Varlam, *Iodine-doped graphene – Catalyst layer in PEM fuel cells*, *Applied Surface Science*, vol. 456, pg 238-245, <https://doi.org/10.1016/j.apsusc.2018.06.100>, 2018, **Q1**
24. Adriana Marinouiu, Mihai Varlam, **Elena Carcadea**, Mircea Raceanu, Amalia Soare, Ioan Stefanescu, *A Class of High Performance Electrocatalysts for Oxygen Reduction Reaction of Fuel Cells*, using Iodine Doped Graphene, *Materials Today: Proceedings*, vol. 5, Issue 8, Part 1, 2018, pg. 15915-15922, 2018
25. Daniela Ion-Ebrasu, Adnana Zaulet, Stanica Enache, Mirela Dragan, Dorin Schitea, **Elena Carcadea**, Mihai Varlam, Konstantin Petrov, *Electrochemical Characterization of Metal Oxides as Catalysts for Oxygen Evolution in Alkaline Media*, *Bulgarian Chemical Communications*, vol. 50 Special issue A, pp. 133-138, 2018, ISSN: 0324-1130
26. A. Marinouiu, M. Raceanu, **Elena Carcadea**, M. Varlam, I. Stefanescu, Low cost iodine intercalated graphene for fuel cells electrodes, *Applied Surface Science*, <http://dx.doi.org/10.1016/j.apsusc.2017.01.295>, 2017
27. A. Marinouiu, Raceanu M, **Carcadea E**, Varlam M, Balan D, Ion-Ebrasu D, Stefanescu I, Enachescu M. Iodine-Doped Graphene for Enhanced Electrocatalytic Oxygen Reduction Reaction in Proton Exchange Membrane Fuel Cell Applications. *J Electrochem Energy Convers Storage* 2017;14:31001. doi:10.1115/1.4036684. (IF=0.817)
28. Marinouiu A, Raceanu M, **Carcadea E**, Varlam M, Soare A, Stefanescu I. Doped Graphene as Non-Metallic Catalyst for Fuel Cells. *Mater Sci* 2017;23:108–13. doi:10.5755/j01.ms.23.2.16216. (IF=0.393)
29. A. Marinouiu, **Elena Carcadea**, C. Cobzaru, C. Cernatescu, Numerical Approach for Catalytic Conversion of CO2 to Methane over Nickel Base Catalysts, *Revista de chimie*, 68 (1), pg. 128-133, 2017

30. A. Marinoiu, M. Raceanu, **Elena Carcadea**, A. Mellichio, D. Marinescu, C. Teodorescu, M. Varlam, I. Stefanescu "Convenient graphene based materials as potential candidate for low cost fuel cell catalysts", Reaction Kinetics, Mechanisms and Catalysis, vol. 118, nr 1, pg 281-296, **2016**, ISSN: 1878-5204, Factor de impact: **1.17**
31. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, M. Raceanu, I. Atkinson, M. Varlam, I. Stefanescu, An experimental approach for finding low cost alternative support material in PEM fuel cells, Revue Roumaine de Chimie, vol 61, nr 4-5, pp. 4533-440, ISSN 0035-3930
32. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, M. Raceanu, D. Schitea, M. Varlam, I. Stefanescu, "New catalysts used in the hydrogenolysis reaction of glycerol", Environmental Engineering and Management Journal, **2015**, <http://omicron.ch.tuiasi.ro/> EEMJ/, eISSN: 1843-3707, Impact factor: **1.065**
33. A. Marinoiu, C. Cobzaru, M. Raceanu, M. Varlam, **Elena Carcadea**, C. Cernatescu, I. Stefanescu, "Carbon dioxide conversion to methane over supported nickel base catalysts", Revue Roumaine de Chimie, **2015**, vol. 60, nr. 2-3, pg. 249-256, ISSN: 0035-3930, Factor de impact: **0,311**
34. A. Marinoiu, C. Teodorescu, **Elena Carcadea**, M. Raceanu, M. Varlam, C. Cobzaru, I. Stefanescu, "Graphene-based Materials Used as the Catalyst Support for PEMFC Applications", Materials Today: Proceedings, **2015**, vol. 2, nr. 6, pg. 3797–3805, The Selected Papers of 10th International Conference on Physics of Advanced Materials, ICPAM-10. doi:10.1016/j.matpr.2015.08.013, Factor de impact: **0**
35. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, M. Raceanu, C. Capris, V. Tanislav, C. Teodorescu, I. Iordache, "Numerical analysis of Cu and Ni based catalysts in the hydrogenation process of glycerol", Environmental Engineering and Management Journal, **2015**, vol. 14, no. 9, 2201-2211 <http://omicron.ch.tuiasi.ro/EEMJ/>, eISSN: 1843-3707, Factor de impact: **1.065**
36. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, M. Raceanu, I. Petreanu, M. Varlam, "Study about glycerol hydrogenolysis using copper chromite catalysts mixed with bases", Revue Roumaine de Chimie, **2014**, vol. 59, nr. 8, pg. 657-662, ISSN: 0035-3930, Factor de impact: **0.311**
37. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, M. Raceanu, A. Enache, M. Varlam, "Mathematical modeling of the glycerol hydrogenolysis using copper chromite catalyst. The effect of additional bases", Environmental engineering and management journal, **10/2014**, <http://omicron.ch.tuiasi.ro/EEMJ/>, eISSN: 1843-3707, Factor de impact: **1.065**
38. A. Marinoiu, C. Cobzaru, **Elena Carcadea**, C. Capris, V. Tanislav, M. Raceanu, "Hydrogenolysis of glycerol to propylene glycol using heterogeneous catalysts in basic aqueous solutions", Reaction Kinetics Mechanisms and Catalysis, **2013**, vol. 110, nr. 1, pg. 63-73, doi: 10.1007/s11144-013-0596-8, ISSN: 1878-5204, Factor de impact: **1.17**
39. **Elena Carcadea**, D. B. Ingham, I. Stefanescu, R.E. Ionete, H. Ene, "The influence of permeability changes for a 7-serpentine channels PEM fuel cell performance", International Journal of Hydrogen Energy, 2011, vol. 36, nr. 16, pg.10376-10383, ISSN: 0360-3199, Factor de Impact: **3.313**
40. **Elena Carcadea**, H. Ene, D. B. Ingham, Roxana Elena Lazar (Ionete), L. Ma, M. Pourkashanian, I. Stefanescu, "A computational fluid dynamics analysis of a PEM fuel cell system for power generation", International Journal of Numerical Methods for Heat & Fluid Flow, **2007**, vol. 17, nr. 3, pp. 302-312, ISSN: 0961-5539, Factor de Impact: **1.399**
41. L.Ma, M. Pourkashanian, D.B. Ingham, **Elena Carcadea**, "A Review of the Computational Fluid Dynamics Modelling of Fuel Cells", Journal of Fuel Cell Science and Technology, **2005**, vol. 2, nr. 4, pg. 246-257, ISSN 1550-624x, Factor de Impact: **0.994**
42. **Elena Carcadea**, H. Ene, D.B. Ingham, Roxana Elena Lazar (Ionete), L. Ma, M. Pourkashanian, I. Stefanescu, "Numerical Simulation of Mass and Charge Transfer for a PEM fuel cell", International Communications in Heat and Mass Transfer, **2005**, vol. 32, nr. 10, pg. 1273 – 1280, ISSN 0735-1933, Factor de Impact **2.782**.

**Published papers indexed by Thomson Reuters Master Journal List (ex-ISI Master Journal List) without impact factor (IF) or by other international databases:**

**Published papers in specialized volumes without ISI cotation**

1. Daniela Ion-Ebrasu, Radu Dorin Andrei, Adrian Enache, Stanica Enache, Amalia Soare, **Elena Carcadea**, Mihai Varlam, 3-D Graphene Growth by Chemical Vapor Deposition (CVD) for Energy Applications, [\*Smart Energy and Sustainable Environment\*, Vol. 23, Iss. 1](#), (2020): 13-20, indexat BDI, Romania
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2. **Carcadea Elena**, Varlam Mihai, Marinoiu Adriana, Raceanu Mircea, Ingham Derek, Mohammed Ismail PEMFC performance improvement by porous layers parameters optimization using numerical investigations 3rd International Symposium on Materials for Energy Storage and Conversion - mESC-IS 10-12 septembrie 2018, Program and the Book of Abstracts, Belgrad, Serbia, prezentare invitata
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## Annex 2: List of published books/chapters

1. *Carcadea E., Varlam M., Finite Volume Method used for numerical investigations of electrochemical devices, Numerical Methods for Energy Applications*, ISBN 978-3-030-62190-2, 2020, Springer
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3. Adriana Marinoiu, Mircea Raceanu, *Elena Carcadea*, Aida Pantazi, Raluca Mesterca, Oana Tutunaru, Simona Nica, Daniela Bala, Mihai Varlam, Marius Enachescu, capitol: Noble metal dispersed reduced graphene oxide and its application in PEM Fuel Cells, in cartea: *Electrocatalysts for Fuel Cells and Hydrogen Evolution: Theory to Design*, Accepted InTechopen, ISBN 978-953-51-6257-5
4. Ioan Stefanescu, Mihai Culcer, Mihai Varlam, Roxana Elena Ionete, Vasile Stanciu, *Elena Carcadea*, Mariana Iliescu, Adrian Enache, Mircea Raceanu, Laurentiu Patularu, Daniela Ebrasu, Vasile Tanislav - Book "Fuel Cells – Between Theory and Practice" (in Romanian), Ed. CONPHYS, Rm. Valcea, 2010, ISBN 978-973-750-197-4
5. Roxana Elena Ionete, *Elena Carcadea*, Mihai Culcer - Chapter 17. European Research Environment in the Field of Hydrogen and Fuel Cell, in book "Complex Behaviour of the Distributed Generation System: Intelligent Management of the Renewable Energy Resources for assuring the DG System Power Quality and a Sustainable Development", Publishing house of the University of Pitești, 2010, Pitești, ISBN 978-606-560-128-4 (hardcover), ISBN 978-606-560-129-1 (e-book).
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8. *Elena Carcadea*, Horia Ene, Bogdan Nicusor Niculescu, Roxana Elena Ionete, Ioan Stefanescu - Book "Fluid dynamics modeling in fuel cells with proton exchange membrane" (in Romanian), Ed. CONPHYS, 2009, ISBN 978-973-750-146-2
9. *Elena Carcadea*, capitol *Modele matematice utilizate în caracterizarea curgerii fluidelor într-o pilă de combustie; programe de simulare, exemple de simulări* în Volumul Pile de Combustie, vol. 1, pg. 61-74, Ed. Universul Energiei, 2005, ISBN 973-86948-7-6, 14 pagini

## Annex 3: The experience accumulated in research projects

### Research Projects

#### International Projects:

- "HyLAW, Identification of legal rules and administrative processes applicable to Fuel Cell and Hydrogen technologies' deployment, identification of legal barriers and advocacy towards their removal", Fuel Cells and Hydrogen Joint Undertaking ('FCH JU') Project, Coordinator Hydrogen Europe, 2017-2020, participant
- "Hydrogen and Fuel Cell Co-ordination (HY-CO)", EC ERAC-CT-2004-011744 FP6 project, participant

#### Romanian National Research Projects:

- Proiect „De la Nano la Macro în Energetica Hidrogenului - Extindere Centru Național de Hidrogen și Pile de Combustibil - HyRo 2.0”, Cod SMIS: 127318, Programul Operațional Competitivitate, cod apel: POC/448/1/1/Mari infrastructuri de CD, contract de finanțare nr. 308/06.07.2020, responsabil tehnic
- Project 25PCCDI "Hydrogen energy revolution driver – fuel cells, on the way from research towards production by mitigation of main technological barriers", 2018-2020, participant
- Project PN III 85PED "Backup Emergency Hydrogen-Based Power Source", 2017-2018, project manager
- Project PN II 284 "Development of a portable power generator – charger type, based on hydrogen electrochemistry, designed for maintaining energy support of the combatants equipment in the tactical field, 2014-2017, project manager
- Project PN "Theoretical and experimental investigations regarding the systems for CO retention at low temperature for PEM fuel cell and their applications", 2013-2014, coordinator
- Project PN " The integration of Renewable Energy using hydrogen based technologies", 2013, participant
- Project POS 2.1.2, Contract 119/2010, ISOTOPES FOR HYDROGEN ENERGY –Towards the understanding of the specifics of reactions involved in the Hydrogen Fuel Cell integrated system using Steady-State Isotope Transient Kinetic Analysis – "Proof-of-concept" for a hydrogen fuel cell power station - participant

- Project PN II "Mathematical modeling and experimental investigation of material degradation in a PEM fuel cell" – ICIT team coordinator
- PNCDI 2: „Miniinstalation for energy production from renewable sources. Application for microunits and residential assemblies” - participant
- PNCDI 2: "Fuzzy systems for simulating and evaluating scenarios with technological and ecological risks and actions mode in the climatic changing context" - participant
- Project CEEX-Modulus I "Heat and water management for PEM fuel cell systems" - ICIT team coordinator
- Project CNCISIS "Development of a computational model for heat and water management in a proton exchange membrane fuel cell", participant
- Project CEEX-Modulus III "Promoting and supporting the integration of the Romanian research in the field of energy conversion and renewable energy sources in the European technology platform for hydrogen and fuel cells", participant
- Project CEEX-Modulus III, „Promoting the participation to European research program in the hydrogen and fuel cells domain”, participant;
- Project PN - "Analyses and optimization of PEM fuel cell from geometry and heat and water management points of view" – participant
- Project Sectorial Plane "Developing integrated research platforms in the energetic domain" - participant
- Project PN – "Study regarding the fluid dynamics in hydrogen fuel cells" – participant
- Project MENER – "Technology for energy conversion and storage using hydrogen fuel cells, for telecommunication" – participant;
- Project MENER – "Integrated system for energy production using fuel cells with hydrogen and polymer electrolyte membrane" - participant

#### Annex 4: Awards

1. First Prize awarded by the National Authority for Scientific Research – Romania, for the fundamental research project "Conversion technologies and energy storage in hydrogen fuel cells", Bucharest 2005

#### Annex 5: Patents and patent requests

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2. Ebrasu Daniela, Adnana-Spinu Zaulet, Elena Carcadea, Varlam Mihai, Process for the synthesis of perfluorosulfonic membranes with graphene oxide Patent request no. A/00366/24.05.2018
3. L.G. Patularu, D.M. Schitea, A.M. Chitu, M. Varlam, E. Carcadea, Procedure to develop a sealing system for fluids in PEM fuel cells, Patent request no. A/01106/13.12.2017
4. A. Marinoiu, M. Raceanu, C. Capris, E. Carcadea, S.F. Ion, M. Varlam, *Process for obtaining a nanoparticulate material based on graphene with metallic nanoparticles*, autori: Patent request no. A/01134/18.12.2017
5. A. Marinoiu, E. Carcadea, M. Raceanu, L. Patularu, M. Varlam, Iodine-doped graphene and process for their preparation, Patent request no A/01133/18.12.2017.

**DATE:**  
March 2021

**SIGNATURE:**