

Curriculum Vitae

Karvelas G. Evangelos

Personal Information	<p><u>Date of birth</u>: 21/02/1985</p> <p><u>Nationality</u>: Greek</p> <p><u>Marital status</u>: Married</p>
Contact Information	<p><u>Address</u>: 102 Derbenakiwn str, Agia Paraskeuh 15343, Athens, Greece</p> <p><u>E-mail</u>: Karvelas@civ.uth.gr</p> <p><u>Telephone</u>: +30 6932380769</p>
Education	<p>Postdoctoral research (04/21 - present)</p> <p>Condensed Matter Physics Laboratory, Department of Physics, Faculty of Science, University of Thessaly, Lamia</p> <p>Supervisor: Professor Theodore Karakasidis</p> <p>Postdoctoral research (12/2019 - 11/21)</p> <p>Laboratory of Thermofluid systems, Department of Mechanical engineering, School of Engineering, University of West Attica, Aigaleo</p> <p>Supervision: Professor Ioannis Sarris</p> <p>PhD studies (2019)</p> <p>School of Engineering, Department of Civil Engineering, University of Thessaly, Volos</p> <p><u>Thesis title</u>: "Magnetic navigation of particles in Newtonian and non-Newtonian fluids"</p> <p><u>Thesis supervisor</u>: Professor Theodore Karakasidis</p> <p>Graduate studies (2012)</p> <p>Msc in Energy, School of Engineering and Physical Sciences, Heriot-Watt University, United Kingdom</p> <p>Postgraduate Thesis: "A Three Dimensional Computational Fluid Dynamics Analysis (CFD) of a Direct Methanol Fuel cell"</p> <p><u>Thesis supervisor</u>: Assistant professor Ioannis Sarris</p> <p>Undergraduate studies (BSc) (2009)</p> <p>Technological Educational Institution of Athens, School of Technological Applications - Department of Energy Technology</p> <p>Engineering Diploma in Mechanical Engineering</p>

Participation in research projects	10.2013 - 10.2015	Magnetic Nanoparticles for targeted MRI Therapy (NANOTHER) Duties: Magnetic driving of drug loaded nanoparticles in human vessels. Supervisor: Klinakis Apostolos
	06.2019 - 09.2019	Structure-property correlations in multi-scale composites. Duties: Simulation of micropolar fluids in fibers. Supervisor: Papathanasiou Athanasios
Work Experience	10.2013 – 10.2015	Simulation of drug loaded magnetic nanoparticles in arteries (Future Intelligence Ltd)
	02.2015 - 10.2015	Software development on Biomedical research foundation Academy of Athens (BRFAA) in the program "Biological activation of carbon nanotubes".
	06.2019 - 09.2019	Structure-property correlations in multiscale composites, Nazarbayev University, Nur Sultan, Kazakhstan
Editorial activities	2023	Guest editor, mdpi, Water
	2023	Guest editor, mdpi, Processes
Reviewer in scientific journals	2017	Number of papers: 3 Journal: International journal for numerical methods in biomedical engineering
	2019	Number of papers:2

		Journal : Applied sciences, Processes
	2020	Number of papers:3 Journal : Fluids, Micromachines
	2022	Number of papers:3 Journal : Micromachines,Sensors
	2023	Number of papers:2 Journal : Micromachines
Fellowships	2019	Magnetic driving of nanoparticles in human Arteries' networks (MIS: 5048923) Program: Operational Programme «Human Resources Development, Education and Lifelong Learning 2014–2020» Invitation: Support of researchers with emphasis on young researchers-cycle B” program code EDBM-103.
	2019	Magnetic navigation in real human arteries of the human body. (MIS-5033021) Program: Operational Programme <<Human Resources Development, Education and Lifelong Learning>> in the context of the project Reinforcement of Postdoctoral Researchers - 2 nd Cycle, implemented by the State Scholarships Foundation (IKY).
	2021	University of Thessaly – Project ParICT_CENG: Development of physical models for advanced materials and validation through experiments and simulation in a high performance computer environment.
Assignment of Computational time	2019	350000 computational time in the context of 7 th call for proposals for production projects for access to ARIS national high performance computing system (pr007023_fat)

2020	620000 computational time in the context of 9 th call for proposals for production projects for access to ARIS national high performance computing system (pr009024_thin)
2021	300000 computational time in the context of 11 th call for proposals for production projects for access to ARIS national high performance computing system (pr011034_fat)

**Books
(Co-Author)**

Computational Fluid Dynamics, Call_III1, Open Academic E-books

**Attendance at
Training Courses**

14-16 Dec 2021

PRACE Training Centre Course
(PTC): Introduction to Parallel Programming

Publications' list

**Scientific
journals**

- P1. N.K. Lampropoulos, **E.G Karvelas** and I. E. Sarris, *Computational Study of the particles interaction distance under the influence of steady magnetic field*, Advances in Systems Science and Applications, vol. 15(3), pp. 227-236 **(2015)**.
- P2. **E.G. Karvelas**, D.G. Koubogiannis, A. Hatziapostolou and I.E. Sarris, *The effect of anode bed geometry on the hydraulic behaviour of PEM fuel cells*, Renewable Energy vol. 93, pp. 269-279 **(2016)**.
- P3. **E.G. Karvelas**, N.K. Lampropoulos and I.E. Sarris, *A numerical model for aggregations formation and magnetic driving of spherical particles based on OpenFOAM*, Computer Methods and Programs in Biomedicine, vol. 142, pp. 21-30 **(2017)**.
- P4. **E.G. Karvelas**, N.K. Lampropoulos, T.E. karakasidis and I.E. Sarris, *A computational tool for the estimation of the optimum gradient magnetic field for the magnetic driving of the spherical particles in the process of cleaning water*, Desalination and water treatment, vol. 99, pp. 27-33 **(2017)**.
- P5. **E.G. Karvelas**, T.E. Karakasidis, I.E. Sarris, *Computational analysis*

- of paramagnetic spherical Fe₃O₄ nanoparticles under permanent magnetic fields*, Computational Materials Science, vol. 154, pp. 464-471 (2018).
- P6. L.T. Benos, **E.G. Karvelas**, I.E. Sarris, *A theoretical model for the magnetohydrodynamic natural convection of a CNT-water nanofluid incorporating a renovated Hamilton-Crosser model*, International Journal of Heat and Mass Transfer, vol. 135, pp. 548-560 (2019).
- P7. L.T. Benos, **E. Karvelas** and I. Sarris, *Crucial effect of aggregations in CNT-water nanofluid magnetohydrodynamic natural convection*, Thermal Science and Engineering Progress, vol. 11, pp. 263-271 (2019).
- P8. **E.G. Karvelas**, C. A. Liosis, L. Benos, T. E. Karakasidis and I. E. Sarris, *Micromixing Efficiency of Particles in Heavy Metal Removal Processes under Various Inlet Conditions*, Water, vol. 11(6), 1135 (2019).
- P9. **E.G. Karvelas**, A. Tsiantis, T. D. Papathanasiou, *Effect of micropolar fluid properties on the hydraulic permeability of fibrous biomaterials*, Computer methods and programs in biomedicine, vol. 185, 105135 (2020).
- P10. C. Liosis, **E.G. Karvelas**, T. E. Karakasidis and I. E. Sarris, *A numerical study of magnetic nanoparticles mixing in waste water under external magnetic field*, Journal of Water Supply: Research and Technology – AQUA, vol. 69(3), pp. 266-275 (2020).
- P11. C. Erisken, A. Tsiantis, T. D. Papathanasiou and **E. G. Karvelas**, *Collagen fibril diameter distribution affects permeability of ligament tissue: A computational study on healthy and injured tissues*, Computer methods and programs in biomedicine, vol. 196, 105554 (2020).
- P12. **E. Karvelas**, G. Sofiadis, T. Papathanasiou and I. Sarris, *Effect of Micropolar Fluid Properties on the Blood Flow in a Human Carotid Model*, Fluids, vol. 5(3), 125 (2020).
- P13. **E. G. Karvelas**, N. K. Lampropoulos, L. T. Benos, T. Karakasidis and I.E. Sarris, *On the magnetic aggregation of Fe₃O₄ nanoparticles*, Computer methods and programs in biomedicine, vol. 198, 105778 (2021).
- P14. **E.G. Karvelas**, C. A. Liosis, A. Theodorakakos and T. E. Karakasidis, *An optimized method for 3D magnetic navigation of nanoparticles inside human arteries*, Fluids, vol. 6(3), 97 (2021).
- P15. C. Liosis, A. Papadopoulou, **E.G. Karvelas**, T. E. Karakasidis and I.

- E. Sarris, *Heavy metals adsorption using magnetic nanoparticles for water purification: a critical review*, *Materials*, vol. 14(24), 7500 (2021).
- P16. A. Gkoutas, N. Polychronopoulos, G. Sofiadis, **E. Karvelas** and L. Spyrou and I. Sarris, *Simulation of Magnetic Nanoparticles Crossing through Blood-Brain Barrier for Glioblastoma Multiforme Treatment*, *Computer methods and programs in biomedicine*, vol. 212, 106477 (2021).
- P17. C. Liosis, **E.G.Karvelas**, T. E. Karakasidis and I. E. Sarris, *Mixing of Fe₃O₄ nanoparticles under electromagnetic and shear conditions for wastewater treatment applications*, *Journal of Water Supply: Research and Technology – AQUA*, 71 (6): 671–681 (2022).
- P18. **E.G.Karvelas**, N.K. Lampropoulos, T. E. Karakasidis and I. E. Sarris, *Blood flow and diameter effect in the navigation process of magnetic nanocarriers inside the carotid artery*, *Computer methods and programs in biomedicine*, 221, 106916 (2022).
- P19. C. Liosis, G. Sofiadis, E. Karvelas, T. Karakasidis, I. Sarris, *A Tesla Valve as a Micromixer for Fe₃O₄ Nanoparticles*, *Processes*, 10 1648 (2022).
- P20. **E.G. Karvelas**, S.N. Doulkeridis, T.E. Karakasidis, I.E. Sarris, *Investigation of inlet conditions in the mixing process of nanoparticles and blood in a T-shaped microfluidic reactor with small rectangular cavities*, *Yale Journal of Biology and Medicine*, (accepted 2023)
- P21. D. Koubogiannis, **E. G. Karvelas**, A. Hatziapostolou and I. Sarris, *Assessment of the effect of anode bed size on the hydraulic behavior of PEM fuel cells for various bed geometries*, *Energies* (Under Review).

**Scientific
Conferences
(*Speaker)**

- C1. N.K Lampropoulos, **E.G Karvelas** and I.E. Sarris, ‘Computational Modeling of an MRI Guided Drug Delivery System Based on Magnetic Nanoparticle Aggregations for the Navigation of Paramagnetic Nanocapsules in the Cardiovascular System’, 11th World Congress on Computational Mechanics (WCCM XI) and 5th European Conference on Computational Mechanics (ECCM V) and 6th European Conference on Computational Fluid Dynamics (ECFD VI), July 20 - 25, 2014, Barcelona (Spain).
- C2. **E.G. Karvelas***, N.K Lampropoulos, I.E. Sarris and T. Karakasidis. Computational analysis of a Magnetic Guided Drug Delivery System, ROH, 12 - 13 December 2014, Athens, Greece

- C3. **E.G. Karvelas**, N.K Lampropoulos, I.E. Sarris, Computational study of the optimal magnetic field for the navigation of magnetic nanoparticles inside human arteries, 1st European Conference on Pharmaceutics: Drug Delivery, 13-14 April 2015, Reims, France.
- C4. N.K. Lampropoulos, **E.G. Karvelas***, D.I. Papadimitriou and I.E. Sarris, 'Computation of the optimal magnetic field for the navigation of magnetic nanoparticles in arteries', 6th Pan-Hellenic Conference on Biomedical Technology (ELEVIT 2015), 6-8 May 2015, Athens, Greece.
- C5. N.K. Lampropoulos, **E.G. Karvelas**, D.I. Papadimitriou and I.E. Sarris, 'Computational study of the optimum gradient magnetic field for the navigation of spherical particles into targeted areas', International Conference on Bio-Medical Instrumentation and related Engineering and Physical Sciences (BIOMEF 2015), 18-20 June 2015, Athens, Greece.
- C6. D.G. Koubogiannis, G. Tsimperoudis, **E.G. Karvelas**, CFD as a Tool for Thermal Comfort Assessment, Environment & energy in SHIPS, 22-24 May 2015, Athens, Greece.
- C7. **E.G. Karvelas**, N.K. Lampropoulos, T.E. Karakasidis and I.E. Sarris, 'Computational study of the optimum gradient magnetic field for the navigation of spherical particles in the process of cleaning the water from heavy metals' 2nd EWaS International Conference, 1-4 June 2016, Chania, Greece.
- C8. **E.G. Karvelas***, N. K. Lampropoulos, T.E. Karakasidis and I.E. Sarris, Parametric studies for the aggregation and driving process of spherical particles in the context of magnetic drug delivery, ROH, 2 - 3 December 2016, Patras, Greece .
- C9. N. Kefou, **E. G. Karvelas**, T.E. Karakasidis and and I.E. Sarris, Magnetohydrodynamic micromixers for cleaning of water from heavy metals, ROH, 2 - 3 December 2016, Patras, Greece.
- C10. **E G. Karvelas**, N.K. Lampropoulos, D.I. Papadimitriou and I.E. Sarris, Computational study of the optimum gradient magnetic field for the navigation of spherical particles into targeted areas, Conference on Bio-Medical Instrumentation and related Engineering and Physical Sciences (BIOMEF), October 12-13 2017, Athens, Greece.
- C11. **E.G. Karvelas**, N. K. Lampropoulos, T.E. Karakasidis and I.E. Sarris, 'A computational analysis of paramagnetic spherical nanoparticles for medical applications under magnetic field', European congress and exhibition on advanced materials and processes (Euromat 2017), 17-22 September 2017, Thessaloniki, Greece.
- C12. **E.G. Karvelas**, T.E. Karaksidis and I.E Sarris, 'A computational method for optimum mixing of nanoparticles in micromixers by using external magnetic fields', 3rd EWaS International

Conference, 27-30 June 2018, Lefkada, Greece.

- C13. **E.G. Karvelas**, L. T. Benos, T. E. Karakasidis and I. Sarris, Numerical analysis of paramagnetic Fe_3O_4 nanoparticles under the influence of permanent constant magnetic field, 11th National Conference on Fluid Flow Phenomena, 23-24 November 2018 Kozani, Greece.
- C14. **E.G Karvelas**, C. Liosis, T.E. Karakasidis and I.E. Sarris, Mixing of nanoparticles under magnetic fields in micromixers, 12 Pan-Hellenic Conference of Chemical Engineering, Athens, Greece, 29-31 May 2019.
- C15. **E. Karvelas**, C. Liosis, T. Karakasidis and I.E. Sarris, Micromixing Nanoparticles and Contaminated Water Under Different Velocities for Optimum Heavy Metal Ions Adsorption, 4th EWaS International Conference, 24-27 June 2020, Corfu, Greece.
- C16. **E. G. Karvelas**, C. Liosis, A. Theodorakakos and T.E. Karakasidis, An optimized method for 3D magnetic navigation of nanoparticles inside human arteries, 23th International Conference on Drug Delivery Nanosystems for Biomedical Engineering Applications, 18-19 January 2021, Rome, Italy.
- C17. **E. G. Karvelas***, N.K. Lampropoulos and Ioannis Sarris, Optimum magnetic navigation of nanoparticles inside the human carotid, Euro-Global Conference on Biotechnology and Bioengineering (ECBB 2021), 06-08 September 2021, Rome, Italy.
- C18. **E. G. Karvelas**, C. Liosis, T.E. Karakasidis and Ioannis Sarris, Magnetic Navigation of Nanoparticles for Drug Delivery inside a Carotid Artery Under the Cardiac Cycle, XXXV Panhellenic Conference on Solid State Physics and Materials Science Congress Center, NCSR "Demokritos", 26-29 September 2021, Athens, Greece.
- C19. G. Sofiadis, **E.G. Karvelas** and Ioannis Sarris, Turbulence intensification of a micropolar channel flow, 9th International Conference on Vortex Flow Mechanics – ICFVM 2021, 11-14 October 2021, Patras, Greece.
- C20. **E.G. Karvelas**, C. Liosis, I. Sarris, T. E. Karakasidis, Evaluation of the Tesla valve as a micromixer for Fe_3O_4 nanoparticles and contaminated water, XXXVI Pan-Hellenic conference on Solid-State Physics and Materials Science Heraklion, 26-28 September 2022.

**Conference
proceedings**

- Cp1. N.K Lampropoulos, **E.G Karvelas** and I.E. Sarris, *Computational Modeling of an MRI Guided Drug Delivery System Based on Magnetic Nanoparticle Aggregations for the Navigation of*

- Paramagnetic Nanocapsules*, 11th World Congress on Computational Mechanics, 5th European Conference on Computational Mechanics, 6th European Conference on Computational Fluid Dynamics, pp. 823-847 (2014)
- Cp2. N.K. Lampropoulos, **E.G Karvelas**, D.I Papadimitriou and I. E. Sarris, *Computational study of the optimum gradient magnetic field for the navigation of spherical particles into targeted area*, Journal of Physics: Conference Series vol. 637 (1), 012038 (2015)
- Cp3. **E.G. Karvelas**, N.K. Lampropoulos, T.E. Karakasidis and I.E. Sarris, *Computational study of the optimum gradient magnetic field for the navigation of spherical particles in the process of cleaning the water from heavy metals*, Procedia Engineering, vol. 162 pp. 77-82 (2016)
- Cp4. N. Kefou, **E.G. Karvelas**, K. Karamanos, T. Karakasidis and I.E. Sarris, *Water Purification in Micromagnetofluidic Devices: Mixing in MHD Micromixers*, Procedia Engineering, vol. 162 pp. 593-600 (2016)
- Cp5. **E.G. Karvelas**, N.K. Lampropoulos, D.I. Papadimitriou, T.E. Karakasidis and I.E. Sarris, *Computational study of the effect of gradient magnetic field in navigation of spherical particles*, Journal of Physics: Conference Series 931(1),012014 (2017)
- Cp6. **E.G Karvelas**, C. Liosis, T.E. Karakasidis and I.E. Sarris, *Mixing of Particles in Micromixers under Different Angles and Velocities of the Incoming Water*, MDPI Proceedings, 2(11), 577 (2018)
- Cp7. **E. Karvelas**, C. Liosis, T. Karakasidis and I.E. Sarris, *Micromixing Nanoparticles and Contaminated Water Under Different Velocities for Optimum Heavy Metal Ions Adsorption*, Environmental Sciences Proceedings, 2, 65 (2020).
- Cp8. **E. Karvelas**, C. Liosis, A. Theodorakakos and T. Karakasidis, *An Optimized Method for 3D Magnetic Navigation of Nanoparticles inside Human Arteries*, World Academy of Science, Engineering and Technology International Journal of Biomedical and Biological Engineering, 15, 1 (2021). (Best Paper Award)

Foreign Languages

English: C2

Software and programming language

Linux (excellent)
 Windows (excellent)
 Προγράμματα Microsoft Office (excellent)
 OpenFoam (excellent)
 AutoCAD (basic)

Ansys workbench (very good)
Fortran (very good)
C++ (excellent)