

PERSONAL INFORMATION

Chatzidai Nikoleta

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📅 **Date of birth** 04/02/1978 | **Nationality** Greek

👤 **Marital Status** Married; Two children

RESEARCH INTERESTS

- 3D printing
- Mechanics of polymers
- Structural analysis
- Computer-aided process analysis
- Numerical methods for solving basic and applied problems
- Newtonian and Non-Newtonian Fluids, Two phase flows, Free surface flows
- Ecodesign

EDUCATION AND TRAINING

October 2002 - November 2008

Ph.D in Chemical Engineering

University of Patras, Dept. of Chemical Engineering, Greece

Thesis: "Motion, deformation and interaction of bubbles due to gravity and/or variation of the pressure of the ambient fluid." Supervisor: Professor John Tsamopoulos

- Code development for solving free surface flows and two phase flows
- Computer-aided process analysis, Stability analysis
- Numerical methods for solving basic and applied problems

October 2002 - November 2008

Post Graduate Specialization Diploma in Process Simulation, Optimization and Control

8.89/10

University of Patras, Dept. of Chemical Engineering, Greece

- Code development for solving free surface flows and two phase flows
- Computer-aided process analysis, Stability analysis
- Numerical methods for solving basic and applied problems

October 1996 - November 2001

Diploma in Chemical Engineering

7.5/10

Aristotle University of Thessaloniki, Dept of Chemical Engineering, Greece

TEACHING EXPERIENCE

September 2019 - Today

Assistant Professor

University of Piraeus, Dept. of Industrial Management and Technology, Greece

Modeling and Analysis of Advanced Manufacturing Technologies using Numerical Methods - Finite Element Methods

Undergraduate Courses:

- Introduction in Engineering Mechanics
- Introduction to Mechanics of Materials
- Industrial Technology Laboratory
- Computer-Aided Product Manufacturing
- Mathematics I
- Materials Selection in Product Design
- Natural Resources Management & Environment

Postgraduate Courses:

- Environmental Standards and Specifications
- Climate Change and Sustainability

February 2019 - September 2019

Lecturer

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Lecturer at the Undergraduate Course: «**Introduction to Mechanics of Materials**»

September 2018 - February 2019

Lecturer

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Lecturer at the Elective Undergraduate Course: « **Materials Selection in Product Design** »

March 2018 - June 2018

Lecturer

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Lecturer at the Undergraduate Course: «**Introduction to Mechanics of Materials**»

March 2017 - February 2018

Lecturer

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Lecturer at the Elective Undergraduate Course: « **Materials Selection in Product Design** »

October 2014 - February 2018

Teaching Assistant

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Teaching Assistant at the Postgraduate Elective Course: «**Ecodesign**»

October 2016 - February 2017

Lecturer

University of Piraeus, Dept. of Industrial Management and Technology, Greece

- Lecturer at the Elective Undergraduate Course: «**Recycling: Economic & Technological Issues**»

February 2003 - June 2005

Teaching Assistant

University of Patras, Dept. of Chemical Engineering, Greece

- Teaching Assistant at the Postgraduate Course: «**Numerical Methods**»
- Teaching Assistant at the Postgraduate Course: «**Computers and Algorithms**»

GRADUATE STUDENT ADVISING ACTIVITY

Undergraduate Students

- S. Vrettou, " Study of the Mechanical Behaviour of Materials and Scaffolds for the Creation of Bone Tissue ", (dissertation support: 06/2022)

Postgraduate Students

- A. Kastrinakis, "Comparative Life Cycle Assessment of Electric Vehicle Battery Packs Using ECODESIGN PILOT" (dissertation support: 25/07/2024)
- P. A. Ganitis, "Optimization of the Production Structures of an Enterprise through Sustainability", in progress
- S. Michaloliakou, "Environmental Assessment of Lithium Ion Battery using ECODESIGN PILOT" (dissertation support: 22/07/2021)
- P. Lazaridis, "Building Materials and Mechanical Systems for the construction of buildings with almost zero energy consumption and CO2 emissions. Application studies in residential and office buildings", in progress

Supervision of over 20 Postgraduate students.

Doctoral Studies

- K. Matsika-Klossa, August 2022-Today

RESEARCH EXPERIENCE

April 2024 - Today

Researcher

University of Piraeus, Dept. of Industrial Management and Technology, Greece

Laboratory of Advanced Manufacturing Technologies and Testing

Participation in research program: "easyHPC@eco.plastics.industry. WCG: An open HPC ecosystem for the ecological transformation and the advancement of the competitiveness of the Plastic Industry in the Regions of West & Central Greece", National Program: "Competitiveness (NSRF 2021-2027): Development of European Digital Innovation Hubs Network which have received a Seal of Excellence from the "Digital Europe" Programme"

June 2022 - Today

Researcher

University of Piraeus, Dept. of Industrial Management and Technology, Greece

Laboratory of Advanced Manufacturing Technologies and Testing

Participation in research program: Topology optimization of 3D printed patient-specific spinal braces (OrThOP3Dics), National Programme "Research-Create-Innovate B Round" funded by the Operational Programme Competitiveness, Entrepreneurship and Innovation (EPAnEK), General Secretariat of Research and Innovation, Ministry of Development & Investments, Hellenic Republic, 2022- 2024

December 2015 -June 2022

Researcher

University of Piraeus, Dept. of Industrial Management and Technology, Greece

Laboratory of Advanced Manufacturing Technologies and Testing

- Research on the design, fabrication, and optimization of specimens (rectangular and orthogonal) and scaffold structures with Additive Layered Manufacturing techniques
- Computational simulation of scaffolds' and specimens' behavior static, fluid or thermal environments using ANSYS 13.0 and ABAQUS 6.2-1

June 2014 -November 2015

Post-Doctoral Fellow

University of Piraeus, Dept. of Industrial Management and Technology, Greece

Laboratory of Advanced Manufacturing Technologies and Testing

Participation in research program: In Situ Monitoring Additive Rapid Manufacturing, ARISTEIA (EXCELLENCE) II Programme, funded by the Hellenic Ministry of Education, General Secretariat for Research and Technology. .

- CAD design of thin plates and rectangular thick specimens that have fabricated with Additive Layered Manufacturing techniques
- Computational simulation of the thermal diffusion and the residual strains in thin plates and rectangular thick specimens using ANSYS 13.0
- Tensile testing experiments of 'dogbone' specimens with embedded FBG sensor
- Computational simulation of the tensile testing experiments using ANSYS 13.0 .

January 2013 -May 2014

Post-Doctoral Fellow

Foundation of Research and Technology - Hellas (FORTH) Greece - Institute of Electronic Structure and Laser

In collaboration with the Laboratory of Advanced Manufacturing Technologies and Testing, Dept. of Industrial Management and Technology, University of Piraeus

Participation in research program: *3D Structures for Tissue Engineering*, THALIS Programme, funded by the Hellenic Ministry of Education

- CAD scaffold design, investigation and optimization of scaffold design
- Computational simulation of the scaffold behaviour in a static or fluid environment using ANSYS 13.0
- Computational structural analysis of the scaffold designs with different material properties (ABS, HA) using ANSYS 13.0 and ABAQUS 6.2-1
- Fabrication of the 3D scaffolds with 3D printing techniques
- Compressive strength testing of the 3D printed fabricated scaffolds

May 2010 - September 2011

Researcher

University of Patras, Dept. of Chemical Engineering, Greece

Laboratory of Computational Fluid Mechanics

- Research on the flow of viscoplastic materials
- Code development, Finite Element Method

WORK EXPERIENCE

May 2009 - February 2010

Chemical Engineer-External Associate

AGROENERGYA.E., Attica, Greece

- Assistance on the engineering design, installation and support of renewably energy plants

May 2002 - September 2002

Project Manager Assistant

AMYLUM HELLAS, Thessaloniki, Greece

- Filling, Retailing orders, Design parts of the productivity unit using AutoCAD

June 2001 - September 2001

Summer Practice

Landfill of the East side of Thessaloniki

- Chemical analyzes of gas and water pollutants

PERSONAL SKILLS

Mother Tongue Greek

Other Languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken Interaction	Spoken Production	
English	B2	B2	B2	B2	B2
	First Certificate in English				
Italian	A2	A2	A2	A2	A2
	Diploma di Lingua Italiana				

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

Computer skills

- Commercial Software Packages: CES EduPack and CES Selector, Ansys, Abaqus, Fluent, Gambit, Polyflow
- Extensive experience with UNIX/LINUX, Windows operating systems and FORTRAN programming.
- Competent with the most Microsoft Office programs

MEMBERSHIP IN
PROFESSIONAL SOCIETIES

- Technical Chamber of Greece (since 2002).
- Hellenic Society of Rheology (since 2006).

REVIEWER

Reviewer at the journals:

- | | |
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| ▪ Frontiers in Physics | (5-year Impact Factor: 4.529) |
| ▪ Additive Manufacturing | (5-year Impact Factor: 12.29) |
| ▪ Journal of Material Science | (5-year Impact Factor: 3.896) |
| ▪ International Journal of Precision Engineering and Manufacturing | (5-year Impact Factor: 1.887) |
| ▪ Ain Shams International Journal | (5-year Impact Factor: 3.841) |
| ▪ Computers and Electronics in Agriculture | (5-year Impact Factor: 7.282) |
| ▪ Journal of Biomechanics | (5-year Impact Factor: 2.778) |
| ▪ International Journal of Numerical Methods in Biomedical Engineering | (5-year Impact Factor: 3.117) |
| ▪ Rapid Prototyping Journal | (5-year Impact Factor: 3.75) |
| ▪ Materials and Design | (5-year Impact Factor: 7.994) |
| ▪ Journal of Computational Design and Engineering | (5-year Impact Factor: 6.127) |

RESEARCH PROJECTS

April 2024 - Today	Competitiveness (NSRF 2021-2027): Development of European Digital Innovation Hubs Network which have received a Seal of Excellence from the "Digital Europe" Programme" (MIS: 6001593): "easyHPC@eco.plastics.industry. WCG:An open HPC ecosystem for the ecological transformation and the advancement of the competitiveness of the Plastic Industry in the Regions of West & Central Greece"
June 2022 - Today	RESEARCH-CREATE-INNOVATE B ROUND Programme: "Topology Optimization of 3D Printed Patient-Specific Spinal Braces (OrThOP3Dics)"
June 2014 -November 2015	ARISTEIA (EXCELLENCE) II Programme -3805: "In Situ Monitoring Additive Rapid Manufacturing (S.M.A.R.T.)"
January 2013 -May 2014	THALIS Programme (MIS 380278): "3D Structures for Tissue Engineering "
September 2006 - November 2006	K. Karatheodory 2003: "Study of polymer film production with the blowing extrusion process"
July 2003 - June 2006	PENED 2001-558: "Rainfall study on the aerodynamic characteristics of the aircraft wing"
October 2002 - September 2003	Postgraduate Programs at the University of Patras, Department of Chemical Engineering

PUBLICATIONS - PRESENTATIONS

Publications

- P_1. J. Tsamopoulos, Y. Dimakopoulos, **N. Chatzidai**, G. Karapetsas, M. Pavlidis, "Steady bubble rise and deformation in Newtonian and viscoplastic fluids and conditions for bubble entrapment", J. Fluid Mech. 601 (2008) 123-164.
- P_2. **N. Chatzidai**, A. Giannousakis, Y. Dimakopoulos, J. Tsamopoulos, "On the elliptic mesh generation in domains containing multiple inclusions and undergoing large deformations", J. Comput. Phys., 228 (6) (2009) 1980-2011.

- P_3. **N. Chatzidai**, Y. Dimakopoulos, J. Tsamopoulos, "Viscous effects on the oscillations of two equal and deformable bubbles under a step change in pressure", *J. Fluid Mech.*, 673 (2011) 513-547.
- P_4. S.Galanopoulos, **N. Chatzidai**, V. Melissinaki, A. Selimis, C. Schizas, M. Farsari, D. Karalekas, "Design, fabrication and computational characterization of a 3D micro-valve built by multi-photon polymerization", *Micromachines*, 5(3) (2014) 505-514.
- P_5. A. Kantaros, **N. Chatzidai**, D.Karalekas, "3D-printing assisted design of scaffold structures", *Int. J. Adv. Manuf. Technol.*, 82(1) (2016) 559-571.
- P_6. C. Kousiatza, **N. Chatzidai**, D. Karalekas, "Temperature mapping of 3D printed polymer plates: Experimental and numerical study", *Sensors*, 17(3) (2017) 456-469.
- P_7. **N. Chatzidai**, D. Karalekas, "Experimental and numerical study on the influence of critical 3D printing processing parameters", *Fracture and Structural Integrity*, 50 (2019) 407-413.
- P_8. C. Matsika Klossa, **N. Chatzidai**, D. Karalekas, "Tensile properties of 3D printed carbon fiber reinforced nylon specimens", *Materials Today: Proceedings*, 93(4) (2023), 571-574.
- P_9. M. Karna, Ch. Kakalis, **N. Chatzidai**, Ch. Kousiatza, T. Tambouratzis, D. Karalekas, "A combined experimental and artificial neural networks study of distortion in 3D printed beam specimens", *Materials Today: Proceedings*, 93(4) (2023), 589-593.
- P_10. C. Matsika-Klossa, **N. Chatzidai**, C. Kousiatza, D. Karalekas, "Characterization of Thermal Expansion Coefficient of 3D Printing Polymeric Materials Using Fiber Bragg Grating Sensors", *Materials*, 17(18) (2024), 4668

Chapters in Books

- B_1. **N. Chatzidai**, D. Karalekas, "A computational based design and optimization study of scaffold architectures", in "Applications of Computational Tools in Biosciences and Medical Engineering", Andreas Öchsner and Holm Altenbach (eds.), Springer book series on "Advanced Structured Materials", 71 (2015), 1-17.

Conference Presentations

- C_1. G. Karapetsas, **N. Chatzidai**, M. Pavlidis and J. Tsamopoulos, "Transient squeeze flow of viscoplastic liquids", HSR 2004, Athens, Greece, June 2004. Abstract in the Conference Proceedings, p.50.
- C_2. G. Karapetsas, **N. Chatzidai**, M. Pavlidis and J. Tsamopoulos, "Transient squeeze flow of viscoplastic liquids", 21st International Congress of Theoretical and Applied Mechanics (ICTAM), Warsaw, Poland, August 2004. Abstract in the Conference Proceedings, p. 150.
- C_3. **N. Chatzidai**, J. Tsamopoulos, "Motion and deformation of bubbles due to a step change in the pressure of the ambient liquid", 5th Panhellenic Conference in Chemical Engineering, Thessaloniki, Greece, May 2005. Paper in the Proceedings, pp. 909-912.
- C_4. **N. Chatzidai**, M. Pavlidis, J. Tsamopoulos, "Numerical investigation of a bubble rising in a Bingham fluid", 3rd Annual European Rheology Conference, AERC, Hersonisos, Greece, April 2006. Abstract in the Conference Proceedings, p.92.
- C_5. **N. Chatzidai**, J. Tsamopoulos, "Bubble interactions in acoustic fields fully accounting for viscous effects", 6th EUROMECH Fluid Mechanics Conference, Stockholm, Sweden, June 2006. Abstract in the Conference Proceedings, p.184.
- C_6. **N. Chatzidai**, M. Pavlidis, G. Karapetsas, Y. Dimakopoulos, J. Tsamopoulos, "Flow and deformation of a bubble in a viscoplastic fluid", Flow-2006 Conference, Patras, Greece, November 2006. Abstract in the Conference Proceedings, p.17.
- C_7. J. Tsamopoulos, Y. Dimakopoulos, **N. Chatzidai**, G. Karapetsas, M. Pavlidis, "Steady bubble rise and deformation in Bingham fluids and conditions for their entrapment", 4th Annual European Rheology Conference, AERC, Napoli, Italy, April 2007. Abstract in the Conference Proceedings, p.227.

- C_8. **N. Chatzidai**, M. Pavlidis, G. Karapetsas, J. Tsamopoulos, "Steady flow, deformation and entrapment of a bubble in a viscoplastic liquid", 6th Panhellenic Conference in Chemical Engineering, Athens, Greece, May 2007. Paper in the Proceedings, p.1057.
- C_9. **N. Chatzidai**, J. Tsamopoulos, "Bubble interaction due to a pressure change in a Newtonian liquid", 6th Panhellenic Conference in Chemical Engineering, Athens, Greece, May 2007. Paper in the Proceedings, p. 1001.
- C_10. J. Tsamopoulos, Y. Dimakopoulos, **N. Chatzidai**, G. Karapetsas, M. Pavlidis, "Steady bubble rise and deformation in Bingham fluids and conditions for their entrapment", XVth International Workshop on Numerical Methods for non-Newtonian Flows, Rhodes, Greece, June 2007, p.42.
- C_11. J. Tsamopoulos, Y. Dimakopoulos, **N. Chatzidai**, G. Karapetsas, M. Pavlidis, "Steady bubble rise and deformation in Newtonian and Bingham fluids and conditions for their entrapment", 6th European Congress of Chemical Engineering, Copenhagen, DENMARK, September 2007, Paper in the Proceedings, p. 245, volume 2.
- C_12. **N. Chatzidai**, M. Pavlidis, Y. Dimakopoulos, J. Tsamopoulos, "Steady bubble rise and deformation in Bingham fluids and conditions for their entrapment", Conference on Viscoplasticity: from Theory to Application, Ticino, SWITZERLAND, October 2007, Abstract in the Proceedings, p. 9.
- C_13. **N. Chatzidai**, J. Tsamopoulos, "Effect of the fluid viscosity on the interaction and deformation of two bubbles set in motion by a pressure change of the ambient fluid", 7th Panhellenic Conference in Chemical Engineering, Patras, GREECE, May 2009. Paper in the Proceedings, (7 pages in CD).
- C_14. **N. Chatzidai**, D. Karalekas, "Simulation of fluid flow in scaffold architectures with different porosity and pore size", 2nd Summer School/Workshop 'Photonics meets Biology', Hersonissos, Crete, Greece, October 2013.
- C_15. A. Kantaros, **N. Chatzidai**, A. Bimis, D. Karalekas, "A combined computational-experimental study on the mechanical response of 3D printed scaffolds of different pore geometry", ACE-X2014, Paris, France, July 2014.
- C_16. **N. Chatzidai**, D. Karalekas, "A computational based design and optimization study of scaffold architectures", ACE-X 2014, Paris, France, July 2014.
- C_17. A. Kantaros, **N. Chatzidai**, D. Karalekas, "Investigating the mechanical response of scaffold architectures using 3D-printed models: An experimental and numerical approach", IV International Conference on Tissue Engineering (ICTE2015), Lisbon, June 2015.
- C_18. A. Kantaros, **N. Chatzidai**, D. Karalekas, "Effect of structural design on the mechanical behavior of additive manufactured polymeric scaffolds", 10th Anniversary Conference of the Hellenic Society for Biomaterials, Athens, November 2015.
- C_19. Ch. Kousiatza, S. Economidou, **N. Chatzidai**, D. Karalekas, "Investigating additively manufactured parts performance through the use of fiber optic sensors", International Conference "Science in Technology" (SCinTE2015), Athens, November 2015.
- C_20. Ch. Kousiatza, S.N. Economidou, **N. Chatzidai**, D. Karalekas, "On the investigation of temperature profiles generated during the 3D printing process of thin plates", 17th International Conference on Experimental Mechanics (ICEM 17), Rhodes, Greece, July 2016.
- C_21. S.N. Economidou, Ch. Kousiatza, **N. Chatzidai**, D. Karalekas, "Intra-layer thermal monitoring in the fused deposition modeling technique", 17th International Conference on Experimental Mechanics (ICEM 17), Rhodes, Greece, July 2016.
- C_22. D. M. Stamatopoulou, Ch. Kousiatza, **N. Chatzidai**, D. Karalekas, "Bending behaviour of 3D-printed scaffold beam structures", 28th Annual Conference of the European Society for Biomaterials, Athens, Greece, September 2017.
- C_23. **N. Chatzidai**, Ch. Kousiatza, "A Computational Study on the Effect of Two Printing Parameters in FDM Fabricated Specimens", 1st Mediterranean Conference on Fracture and Structural Integrity (MedFract1), Athens, Greece, February 2020.

- [C_24](#). D. Karalekas, Ch. Kakalis, M. Karna, **N. Chatzidai**, Ch. Kousiatza, T. Tambouratzis, "A Combined Experimental and Artificial Neural Networks Study of Distortion of 3D Printed Beam Structures", 38th Danubia-Adria Symposium on Advances in Experimental Mechanics (38th DAS), Poros Island, Greece, September 2022.
- [C_25](#). C. Matsika-Klossa, D. Karalekas, **N. Chatzidai**, "Tensile Properties of 3D Printed Carbon Fiber Reinforced Nylon Specimens", 38th Danubia-Adria Symposium on Advances in Experimental Mechanics (38th DAS), Poros Island, Greece, September 2022.
- [C_26](#). I. Rossetos, C. Gandes, G. Kazakis, S. Voulgaris, N. Lagaros, K. Soultanis, D. Galanis, F. Pliarhopoulou, C. Matsika-Klossa, **N. Chatzidai**, D. Karalekas, "Computational Simulation of Spine Braces Using Finite Element Analysis", 16th Conference of the Hellenic Spine Society, Hellenic Spine Society and Cyprus Neurosurgery Society, Porto Heli, Greece, October 2023.
- [C_27](#). C. Matsika-Klossa, **N. Chatzidai**, D. Karalekas, "Thermal expansion coefficient investigation of FDM printed materials using Fiber Bragg Grating sensors", 10th Panhellenic Conference on Thermal Analysis & Calorimetry, Greek Society of Thermal Analysis, Larisa, Greece, July, 2024.
- [C_28](#). G. Skotidas, **N. Chatzidai**, D. Karalekas, "The Influence of 3d Printing Parameters on the Energy Consumption of 3D Fabricated Specimens", 10th Panhellenic Conference on Thermal Analysis & Calorimetry, Greek Society of Thermal Analysis, Larisa, Greece, July, 2024.