

Curriculum Vitae

KONSTANTINOS ZACHARIAS

EDUCATION

- 2005 - 2010 Ph.D. in Acoustics, thesis title “Nonlinear acoustics detection techniques: Theory and applications”, Aristotle University of Thessaloniki, School of Engineering, Department of Mathematical, Physical and Computational Sciences, Physics Division, Greece.
- 2004 - 2005 M.Sc. in “Microwave Engineering and Wireless Subsystems Design”, with Distinction, University of Surrey, School of Physical Sciences and Engineering, UK.
- 1997 - 2002 Diploma in Electrical & Computer Engineering, Department of Electrical & Computer Engineering, School of Engineering, Aristotle University of Thessaloniki, Greece.
- 1993 - 1997 Degree in Electronics Engineering, Electronics Department, Technological Educational Institute of Thessaloniki, Greece.

WORK EXPERIENCE

- 7/2020 – today - Head of Acoustics & Vibrations Lab, Hellenic Institute of Metrology (EIM) of National Quality Infrastructure System (NQIS), Division of Physical Quantities, Thessaloniki, Greece. (*Primary Acoustic and Vibration calibrations: free field anechoic chamber, microphones, sound level meters, accelerometers, National Metrological Institute*).
- 2/2011 – 7/2020 - Hellenic Institute of Metrology (EIM) of National Quality Infrastructure System (NQIS), Division of Physical Quantities, Thessaloniki, Greece. (*Temperature and humidity calibrations: thermometers, SPRT, hygrometers. Primary, National Metrological Institute*).
- 5/2010 - 8/2010 - Calibration and Quality Services (CQS) S.A., Thessaloniki, Greece. (*Calibration of measurement instruments (Calibration engineer for thermometers, weight balances, volume, force and length. Writing of calibration procedures according to ISO 17025.)*)
- 10/1996 - 3/1997 - Internship at Electronics III and Digital Circuits labs, Electronics Department, Technological Educational Institute of Thessaloniki, Greece.

RESEARCH EXPERIENCE

- 10/2010- today Research Associate in the following projects:
- In-Vivo Embolic Detector, Phase IVa (European Space Agency-ESA & Dept. of Chemistry, AUTH, Greece)
 - In-Vivo Embolic Detector, Phase IIIb (European Space Agency-ESA & Dept. of Chemistry, AUTH, Greece)
 - Influence of gravity conditions on mass and heat transfer in porous media (European Space Agency-ESA & Dept. of Chemistry, AUTH, Greece)

6/2007- 3/2010

Research Engineer in the following research projects:

- In-Vivo Embolic Detector, Phase IIIa (European Space Agency-ESA & Dept. of Chemistry, AUTH, Greece)
- In-Vivo Embolic Detector, Phase II (European Space Agency-ESA & Dept. of Chemistry, AUTH, Greece)
- Convective Boiling and Condensation (European Space Agency-ESA & Dept. of Chemistry-AUTH Greece)

Research Engineer and Principal Experiment Engineer in the following ESA Parabolic Flight Campaigns (PFC):

- Mass diffusion-induced bubble growth in supersaturated solutions at temperatures below boiling: The role of g-jitters to heat conduction, Department of Chemistry, Aristotle University of Thessaloniki, at 50th Zero-g Parabolic Flight Campaign (PFC) of European Space Agency (ESA)
- COST Short Term Scientific Mission (STSM): Mass diffusion-induced bubble growth in supersaturated solutions at temperatures below boiling: the role of g-jitters to heat conduction (ESA/ESTEC, Noordwijk (NL) at 50th ESA PFC)
- Mass diffusion-induced bubble growth in supersaturated solutions at temperatures below boiling, Department of Chemistry, Aristotle University of Thessaloniki, at 49th Zero-g Parabolic Flight Campaign (PFC) of European Space Agency (ESA)

12/2004-2/2006

Lead researcher in the research project “ARCHIMEDES II: Design and implementation of novel sound barriers with improved performance for traffic noise reduction”, co-funded by the European Union & Greek government, “ARCHIMEDES II” activity.

TEACHING EXPERIENCE

3/2010 - 6/2010

Teaching Assistant in lab course “Experimental methods in machine dynamics”. Department of Mathematical, Physical and Computational Sciences, School of Engineering, Aristotle University of Thessaloniki, Greece.

11/2007 - 6/2008

Teaching Assistant in lab course “Electronics II”. Department of Electrical & Computer Engineering, School of Engineering, Aristotle University of Thessaloniki, Greece.

2/2006 - 9/2007

Teaching Assistant in lab course “Electronics III”. Electronics Department, Technological Educational Institute of Thessaloniki, Greece.

PATENTS

1. T. Karapantsios, S. Evgenidis, Konstantinos Zacharias, T. Mesimeris, “Method for the detection and characterization of bubbles in liquids and device therefore, resp. system”. European Patent Office (EP 14188200.1, filled October 2014).
2. T. Karapantsios, S. Evgenidis, Konstantinos Zacharias, Giorgos Karagiannis, “Καινοτόμα, μη-επεμβατική τεχνική φασματοσκοπίας σύνθετης αντίστασης για την έγκαιρη διάγνωση της στεφανιαίας νόσου (Innovative, non invasive electrical impedance spectroscopy technique for prompt diagnosis of Coronary Artery Disease)”. OBI - Hellenic Industrial Property Organisation (GR 20160100261).

3. T. Karapantsios, S. Evgenidis, Konstantinos Zacharias, Giorgos Karagiannis, “Non-invasive impedance spectroscopy device for early diagnosis of coronary artery disease and method therefor”, (EP 17386020.6, filed May 2017).

HONOURS AND AWARDS

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| 2/2019 | 1 st Prize, 11 th International University Competition on Entrepreneurship and Innovation 2018, member of Cor-IS team. Issued by Athens University of Economics & Business. |
| 12/2017 | Top 100 Entries: The “Portable and Non-invasive Electrical Device for the Diagnosis of Coronary Artery Disease (Cor-IS)” was in the top 100 entries for the 2017 Create the Future Design Contest. Issued by 2017 Create the Future Design Contest. |
| 1/2016 | Most important distinctions of 2015: Excellence Award for the “Non-invasive, innovative, portable impedance spectroscopy technique for the diagnosis of Coronary Artery Disease – CorIS” and the 1st position in the “Falling walls Lab in Athens” competition and representing Greece in the “Falling walls Lab in Berlin 2015” international competition. Issued by Aristotle University of Thessaloniki (AUTH). |

PUBLICATIONS

1. High-resolution concentration measurement in water/n-butanol binary system by means of high-frequency electrical impedance method, Wassilis Tzevelecos, Quentin Galand, Sotiris Evgenidis, Konstantinos Zacharias, Thodoris Karapantsios, Stefan Van Vaerenbergh, *Experimental Thermal and Fluid Science*, Volume 126, 2021.
2. Droplet size distributions derived from evolution of oil fraction during phase separation of oil-in-water emulsions tracked by electrical impedance spectroscopy, Maria C Vlachou, Konstantinos A Zacharias, Margaritis Kostoglou, Thodoris Karapantsios, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 2019.
3. Analysis of Vibroacoustic Modulations for Crack Detection: A Time-Frequency Approach Based on Zhao-Atlas-Marks Distribution, A. Trochidis, L. Hadjileontiadis, and K. Zacharias, *Shock and Vibration*, vol. 2014, 2014
4. Heat transfer from small object in microgravity: experiments and analysis, M. Kostoglou, S. P. Evgenidis, K. A. Zacharias, T. D. Karapantsios, *International Journal of Heat and Mass Transfer*, 2011.
5. Non-linear vibration technique for crack detection in beam structures using frequency mixing, E. Douka, K. A. Zacharias, L. J. Hadjileontiadis, A. Trochidis, *Acta Acustica united with Acustica*, 2010.
6. Effect of Liquid Properties on Heat Transfer from Miniature Heaters at Different Gravity Conditions, S. P. Evgenidis, K. A. Zacharias, T. D. Karapantsios, M. Kostoglou, *Microgravity Science and Technology*, 2010.
7. Microdamage Evaluation in Human Trabecular Bone Based on Nonlinear Ultrasound Vibromodulation, K. Zacharias, E. Balabanidou, I. Hatzokos, I. T. Rekanos and A. Trochidis, *Journal of Biomechanics*, 2009.

CONFERENCES, WORKSHOPS & INVITED SEMINARS

1. Post-dive detection of endothelial dysfunction and bubbles as markers of decompression stress in scuba divers, Sotiris Evgenidis, Konstantinos Zacharias, Virginia Papadopoulou, Nicolas

- Renne, Sigrid Theunissen, Costantino Balestra, Thodoris Karapantsios, 8th Conference Bubble and Drop 2019, 24th – 28th June 2019, Sofia, Bulgaria.
2. S. P. Evgenidis, K. Zacharias, T. D. Karapantsios, “In-Vivo Embolic Detector (I-VED): Technology for bubbles detection in living subjects”, Invited Research Seminar, Joint Department of Biomedical Engineering-UNC Chapel Hill & NC State University, February 4, 2019.
 3. INVESTIGATION OF POST-DIVE ENDOTHELIAL FUNCTIONALITY THROUGH ELECTRICAL IMPEDANCE MEASUREMENTS, Sotiris P. Evgenidis, Konstantinos Zacharias, Virginia Papadopoulou, Nicolas Renne, Sigrid Theunissen, Costantino Balestra, Thodoris D. Karapantsios, Flowing Matter 2018, Lisbon, Feb 5-9, 2018.
 4. Application of an innovative electrical technique for the detection of post-dive endothelial dysfunction, Sotiris P. Evgenidis, Konstantinos Zacharias, Virginia Papadopoulou, Nicolas Renne, Sigrid Theunissen, Costantino Balestra, Thodoris D. Karapantsios, 42nd Annual Scientific Meeting of the European Underwater and Baromedical Society (EUBS), Geneva, Switzerland, September 13-16, 2016.
 5. Post-dive detection of bubbles in scuba divers employing electrical impedance spectroscopy measurements, Sotiris P. Evgenidis, Konstantinos Zacharias, Virginia Papadopoulou, Sigrid Theunissen, Costantino Balestra, Thodoris D. Karapantsios, 42nd Annual Scientific Meeting of the European Underwater & Baromedical Society EUBS 2016, 13-16 September 2016, Geneva, Switzerland.
 6. Development of a Solutal Distribution Measurement Technique for Self-Rewetting Fluids Investigation: SELENE space project, W. Tzevelecos, S. Evgenidis, K. Zacharias, T. Karapantsios, S. Van Vaerenbergh, 22nd European Low Gravity Research Association (ELGRA) symposium and general assembly, Corfu September 29th – October 1st, 2015, Greece.
 7. In-Vivo Embolic Detector (I-VED): Recent Advancements on the Diagnosis of Decompression Sickness through Electrical Measurements of Exceptional High Temporal and Spatial Resolution, S. Evgenidis, K. Zacharias, V. Papadopoulou, S. Theunissen, C. Balestra, T. Karapantsios, 22nd European Low Gravity Research Association (ELGRA) symposium and general assembly, Corfu September 29th – October 1st, 2015, Greece.
 8. Evaluation of coronary circulation system functionality employing non-invasive, highly sensitive bio-impedance measurements, S.P. Evgenidis, K. Zacharias, G. Karagiannis, T.D. Karapantsios, 12ο Συνέδριο Χημείας Ελλάδος-Κύπρου, Θεσσαλονίκη, 8-10 Μαΐου, 2015.
 9. In-Vivo Embolic Detector (I-VED): Research advancements on bubbles detection in living subjects, S. P. Evgenidis, K. Zacharias, A. Mesimeris, T. D. Karapantsios, T. Mesimeris, G. Karagiannis, S. Stefanidou, M. Kotsiou, Smart and Green Interfaces Conference – SGIC 2015, March 30 – April 1, 2015, Belgrade, Serbia.
 10. IN-VIVO EMBOLIC DETECTOR (I-VED): EXPLOITATION OF ELECTRICAL IMPEDANCE SPECTROSCOPY MEASUREMENTS FOR BUBBLES DETECTION IN HUMAN BODY, A. Mesimeris, S.P. Evgenidis, K. Zacharias, T.D. Karapantsios, T. Mesimeris, G. Karagiannis, S. Stefanidou, M. Kotsiou, 40th Annual Scientific Meeting of the European Underwater and Baromedical Society EUBS 2014, 24-27 September 2014, Wiesbaden, Germany.
 11. Crack Identification and Localization in Beam Structures using Time-Frequency Analysis of Vibro-Acoustic Modulation Responses, A. Trochidis, L. Hadjileontiadis and K. Zaharias, The Twelfth International Conference on Computational Structures Technology CST2014, 2-5 September 2014, Naples, Italy.

12. CRACK DETECTION USING VIBRO-MODULATION: A TIME-FREQUENCY APPROACH BASED ON ZHAO-ATLAS-MARKS (ZAM) DISTRIBUTION, Trochidis, A., Hadjileontiadis, L., Zacharias, K., International Conference on Structural Engineering Dynamics ICEDyn 2013, June 17-19, 2013, Sesimbra, Portugal.
13. An electrical technique for detection of microbubbles in living subjects with invitro validation, Sotiris P. Evgenidis, Konstantinos Zacharias, Thodoris D. Karapantsios, Ioannis Savvas, Kiriaki Pavlidou, Lysimachos Papazoglou, Michail Patsikas, Workshop "Smart and Green Interfaces 2013 (Prague)" COST Action MP1106 "Smart and green interfaces - from single bubbles and drops to industrial, environmental and biomedical applications (SGI)", Prague, Czech Republic March 21 – 22, 2013.
14. Characterization of bubble clouds in steady and pulsatile bubbly flows, Sotiris P. Evgenidis, Konstantinos Zacharias and Thodoris D. Karapantsios, 4th International Workshop "Bubble and Drop Interfaces" jointly organized with COST P21 Action "Physics of Droplets" 8th Management Committee + Working Groups Meetings, Thessaloniki, Greece, September 23 - 25, 2009.
15. Non-linear vibration technique for crack detection in beam structures using frequency mixing, K. Zacharias, E. Douka, L. J. Hadjileontiadis and A. Trochidis, The Ninth International Conference on Computational Structures Technology & The Sixth International Conference on Engineering Computational Technology, Athens, Greece, September 2-5, 2009.
16. Microdamage Evaluation in Human Trabecular Bone Using Non-Linear Ultrasound, K. Zacharias, , L.J. Hadjileontiadis, E. Douka, I. Rekanos and A. Trochidis, The Ninth International Conference on Computational Structures Technology & The Sixth International Conference on Engineering Computational Technology, Athens, Greece, September 2-5, 2009.
17. Effect of gravity level on heat transfer from small spheroids, Sotiris P. Evgenidis, Konstantinos Zacharias, Margaritis Kostoglou & Thodoris D. Karapantsios, ELGRA Biennial Symposium and General Assembly "In the Footsteps of Columbus", Bonn, Germany, September 1 - 4, 2009.
18. An advanced acoustical technique for measuring bubbles in stagnant and flowing liquids, K. A. Zacharias, S. P. Evgenidis, T. D. Karapantsios, 2nd International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE) & SECOTOX Conference, Elia, Mykonos, Greece, June 21 - 26, 2009.
19. Design and evaluation of novel barriers, G. Bamnios, I. Rekanos, K. Zacharias and A. Trochidis, European Acoustics Association Acoustics'08, Paris, France, June 29-July 4, 2008.
20. Design of novel sound barriers with improved performance, G. Bamnios, I. Rekanos, K. Zacharias, and A. Trochidis, ELINA Acoustics Conference, Xanthi, Greece, September 29-October 1, 2008.
21. Bone quality assessment using Nonlinear Ultrasound, K. Zacharias, et al., ELINA Acoustics Conference, Xanthi, Greece, September 29-October 1, 2008.
22. Detection of bubbles in two-phase flows with optical and electrical measurements, Sotiris P. Evgenidis, Konstantinos Zacharias, Thodoris D. Karapantsios, Workshop: COST P21: The Physics of droplets, Twente, Netherlands, October 08, 2007.
23. An advanced Acoustical Technique for measuring bubbles in stagnant and flowing liquids, Konstantinos A. Zacharias, Sotiris P. Evgenidis, Thodoris D. Karapantsios, Workshop: COST P21: The Physics of droplets, Capri, Italy, May 15, 2008.
24. Detection of bubbles in liquids with acoustical and electrical measurements, Konstantinos Zacharias, Sotiris P. Evgenidis, Thodoris D. Karapantsios, Workshop: COST P21: The Physics of droplets, Twente, Netherlands, October 08, 2007.
25. Nonlinear acoustic spectroscopy for damage detection, K. Zacharias, A. Trochidis, ELINA Acoustics Conference, Iraklio, Greece, September 18-19, 2006.

26. A Multi-Shaped UTD Solution for Irregular Terrain Propagation Modelling, G. Koutitas, K. Zacharias, C. Tzaras, IEEE Antennas and Propagation Society International Symposium 2006, Albuquerque, New Mexico, USA, July 9-14, 2006.

TRAINING

- *Vibration calibration of accelerometers by comparison to a reference transducer according to EN/IEC 16063-21:2003 standard*, Training organization: Hellenic Institute of Metrology, 10 days (70 hrs), 5-17/4/2013
- *Calibration of sound level meters in an anechoic chamber (free field calibration)*, Training organization: Hellenic Institute of Metrology, 10 days (70 hrs), 5-16/11/2012
- *Calibration of sound level meters according to BS 7580:1997 and EN/IEC 61672-3: 2006 standards*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 24-30/5/2012
- *Calibration of sound calibrators according to EN/IEC 60942:1998 standard*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 18-23/5/2012
- *ISO 17025 and the Quality Management System of Hellenic Institute of Metrology*, Training organization: Hellenic Institute of Metrology, 1 day, 14/10/2011
- *Calibration of thermo-hygrometers*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 4-8/04/2011
- *Calibration of liquid-in-glass thermometers*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 14-18/03/2011
- *Calibration of thermocouples*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 7-11/03/2011
- *Calibration of direct reading thermometers*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 21-25/02/2011
- *Calibration of resistance sensors*, Training organization: Hellenic Institute of Metrology, 5 days (35 hrs), 14-18/02/2011

ATTENDED SEMINARS/MEETINGS, WORKSHOPS

1. Quality infrastructure (European laws: Essential requirements, technical legislation and implementation, market surveillance, accreditation, metrology – Legal metrology: MID, NAWI requirements, framework, roles and implementation), Hellenic Institute of Metrology, Thessaloniki 19/5/2017
2. Unix shell, version control with Git & programming in R, Software Carpentry and Aristotle University of Thessaloniki, October 2016.
3. Medical Diagnostics and Advanced Therapies & Sustainable Food Science and Technology, COST Action MP1106, Joint Cluster Meeting, Naples, November 6-7, 2014
4. 4th International Workshop “Bubble and Drop Interfaces” jointly organized with COST P21 Action “Physics of Droplets”, Thessaloniki, Greece, September 23 – 25, 2009.
5. Workshop: COST P21: The Physics of droplets, Capri, Italy, May 15, 2008.
6. Workshop: COST P21: The Physics of droplets, Twente, Netherlands, October 08, 2007

OTHER QUALIFICATIONS - CERTIFICATIONS

- Licensed amateur radio service operator (higher class) SV2CBA, (awarded 1992)
- European First Aid Certificate, Hellenic Red Cross-Samaritans, Rescuers and Lifeguards Sector (Licence No: 17497, Valid 11/2015-11/2018)

PERSONAL SKILLS

- Research, design and development of electrical, electronic, acoustical and ultrasonic measurements systems, biomedical devices, automation and telecommunication systems, signal processing and algorithms, wireless link design and commissioning
- Acoustical measurements, sound engineering and recordings, room acoustical design and measurements
- Financial management and Technical co-ordination of European research projects
- Writing and submission of European research projects and patents (Intellectual Property Rights-IPR)
- Implementation and management of ISO 17025

INTERESTS AND ACTIVITIES

Sound recording, music production, radio telecommunications, photography.