VASILEIOS A. TZATZADAKIS

Mechanical & Aerospace Engineer M.Sc., Ph.D.
Member of the Technical Chamber of Greece (TCE)
Registration No. 140146 /2016

PERSONAL INFORMATION
Andrea Papandreou 77
Postal Code: 71305
Heraklion, Crete, Greece
Phone: +30 6947 666205
Email: vtzatzas@gmail.com
Nationality: Hellenic

1. Overview

Dr. Tzatzadakis is a Mechanical Engineer, specializing in the **synthesis and characterization of polymer adhesives and nanocomposites**. He earned his bachelor's and master's degree in Mechanical and Aeronautical Engineering from the University of Patras in 2015 and completed his doctoral thesis at the Technology and Strength of Materials laboratory in 2021. His thesis, titled "Synthesis and experimental characterization of a novel biobased adhesive for structural and decorative applications: reinforcement of the adhesive with carbon nanotubes," is focused on the development of bio-based structural adhesives reinforced with carbon nanotubes and, currently, he researches on various nanoparticles for biomedical applications. Dr. Tzatzadakis has published 6 articles (and 2 have been already submitted) in peer-reviewed international journals and has presented his research at 8 conferences, with a total of 93 cross-references as of Nov. 26, 2024.

He has extensive scientific training in the **synthesis and characterization** of the **mechanical and physical properties** of different types of polymer adhesives and nanocomposites. Additionally, he has conducted a life cycle and cost study of bio-based epoxy resins and nano-particle reinforced polymers. His research also includes modeling and analyzing the **mechanical, thermal, and electrical properties of nanocomposites**. As a PhD researcher, Dr. Tzatzadakis was a member of the ECO-COMPASS program, a European HORIZON 2020 program in collaboration with the Ministry of Infrastructure and People's Information of the Republic of China, which aimed to develop improved ecological composite materials for interior construction and minor aircraft components. He also participated in the NYETE program, a European HORIZON 2020 program that focused on developing methodologies for the implementation of innovations regarding ecological integrated aerostructures, with the aim of manufacturing them with recyclable multifunctional thermoplastic matrix composites.

He was **developing and characterizing nano-reinforced, bio-based and biocompatible polymers** for **biomedical applications** and he successfully has presented his work in the S2E Southern European Entrepreneurship for science and technology excellence in the fields of agricultural sciences, engineering and technology, life sciences, and natural sciences in 2024 earning him the certificate and seal of excellence. The current research focus on **biocompatible materials** for antimicrobial applications, the **development of antibacterial surfaces** and **nanomodified coatings**.

Dr. Tzatzadakis has also been actively involved in teaching activities, including editing the undergraduate laboratories of the Strength of Materials courses and providing support work within the **Strength of Materials**, **Science of Materials**, and **Mechanical Behavior of Materials** courses. Currently, he is teaching the course of Epidemiology, Scientific Bibliography Search – Principles of Scientific Writing and Presentation, and he is actively involved in Biomedicine Environmental Nanotechnology in the department of nursing of the Hellenic Mediterranean University.

Dr. Vasilis Tzatzadakis has demonstrated the capability to work with product ontologies due to his extensive and diverse research career. His work in the synthesis and characterization of polymer adhesives and nanocomposites, combined with his involvement in multiple high-profile European HORIZON 2020 programs, has provided him with a **deep understanding of various products and their attributes**. Throughout his career, he has encountered a **wide range of materials** and **applications**, equipping him with the necessary expertise to effectively develop and manage product ontologies.

2. Work experience

Postdoctoral Researcher
Hellenic Mediterranean University
November 2022 – August 2022
Research at Hellenic Mediterranean University.
Keywords:
University Courses, Laboratory Development, Laboratory Skills, Mechanical Testing Of Materials, Life Cycle Assessment (LCA) Composite Manufacturing, Material Development, Nanoparticle Synthesis, GO-rGO, MXene, 3D-printing, Characterization Methods (DSC, TGA, XRD, DMA), Biocompatibility, Coating

Health and Safety Engineer
HSWC
February 2022 - September 2022 (Full-time)
Health and Safety Engineer at HSWC.
Construction Safety, Industrial Safety, Workplace Safety, Fire Safety, Project Management, Airport Construction.

Mechanical Engineer-Researcher
University of Patras
2019-2020
NYETE-European program HORIZON 2020.
Development of methodologies for implementing innovations related to environmentally integrated airframes constructed with recyclable thermoplastic matrix multifunctional composite materials.
Keywords:
Bio-polymers, bio-based polymers, Mechanical Testing of Materials, Nanoparticles implementation.

Mechanical Engineer-Researcher
University of Patras
2016-2019
ECOCOMPASS-European program HORIZON 2020-Ministry of Infrastructure and Information of the People's Republic of China.
Development of improved ecological composite materials for internal structures and secondary construction elements of aircraft.
Keywords:
University Courses, Laboratory Development, Laboratory Skills, Mechanical Testing Of Materials, Life Cycle Assessment (LCA) Composite Manufacturing, Material Development, Nanoparticles implementation , Carbon Nanotubes, Electrical, Thermal, Physical and Mechanical Properties, DSC, DMA.

3. Education

2016 - 2021: University of Patras
Ph.D. in Mechanical and Aerospace Engineering, Department of Mechanical and Aerospace Engineers, Applied Mechanics Sector, Materials Technology and Biomechanics.
Doctoral Thesis:
Synthesis and Experimental Characterization of a Bio-Based Adhesive for Structural Applications - Enhancement of the Adhesive with Carbon Nanotubes.

2010 - 2015: University of Patras
Bachelor's and Master's Degree in Mechanical Engineering (7.47/10)
Thesis:
Study, Development, and Production of Pre-Impregnated Fibrous Layers of Cyanate Ester Matrix Modified with Carbon Nanotubes for the Construction of Structural Composite Materials.

4. Languages

- Greek: Native Language
- English: Proficient (Level C2/Independent User), Certificate of Proficiency in English (ECPE), University of Michigan.
- German: Good Knowledge (Level B2/Independent User), Zertifikat Deutsch B2, State Certificate of Language Proficiency.

5. Awards

The S3E – **Southern European Entrepreneurship Engine**, an EU-funded Project, has certified that Vasileios Tzatzadakis participated in S3E Start, a cohort-based training program that provides skills in technology commercialization and entrepreneurship, held from February 6th to June 18th, 2024. This training involved 87 hours of contact: 30 hours of online training sessions, 17 hours of mentoring, and an average of 40 hours of teamwork.

DOPANTS - HMU RESEARCH PROGRAM

6. Publications in conferences

- V. Tzatzadakis and K.I. Tserpes.
Numerical and analytical evaluation of mechanical, thermal and electrical properties of CNT/polymer multifunctional nanocomposites, using representative unit cells. In: Proceedings of the ICCS20 - 20th International Conference on Composite Structures.
- K. Tserpes, V. Tzatzadakis, and C. Katsiropoulos.
Effect of hygrothermal ageing on the interlaminar shear strength of carbon fiber reinforced rosin-based epoxy bio-composites. In: Proceedings of the ICGC-10 - International Conference on Green Composites.
- K. Tserpes, V. Tzatzadakis, and J. Bachmann.

Electrical Conductivity and Electromagnetic Shielding Effectiveness of Bio Composites. Journal of Composites Science. In: Proceedings of the EMuS2019 - European Conference on Multifunctional Structures.

- K. Tserpes and V. Tzatzadakis.
Computation of mechanical, thermal and electrical properties of CNT/polymer multifunctional nanocomposites using numerical and analytical models. In: MATEC Web of Conferences 2019 (Vol. 304, p. 01013). EDP Sciences.
- V. Tzatzadakis and K. Tserpes. Production of a novel bio-based structural adhesive and characterization of mechanical properties. In: Proceedings of the 9th EASN - Innovation in Aviation & Space to the Satisfaction of the European Citizens.
- Vasileios Tzatzadakis and Konstantinos Tserpes.
The effect of hygrothermal ageing on the bulk mechanical properties and lap shear strength of the bio-based epichlorohydrin/cardanol adhesive. In: Proceedings of the 10th EASN - Innovation in Aviation & Space to the Satisfaction of the European Citizens.
- V. Tzatzadakis, K. Tserpes
Evaluation of mechanical properties and life-cycle analysis of a bio-based structural adhesive. In: PROCEEDINGS OF THE 6th International Conference on Structural Adhesive Bonding
- Vasileios Tzatzadakis, Alexandros Thomos, Franceska Gojda, Fanourios Krasanakis, Athanasios Skouras, Athina Patelarou, Michail Zografakis-Sfakianakis, Konstantinos Giakoumidakis, Kiriaki Chrissopoulou, Spiros H. Anastasiadis, Evridiki Patelarou, and Minas M. Stylianakis.
MXenes embedded PLA nanocomposites for challenging versatile applications. In: Proceedings of the ECCM21 - 21st European Conference on Composite Materials (2024).
- Vasileios Tzatzadakis, Alexandros Thomos, Fanourios Krasanakis, Kiriaki Chrissopoulou, Spiros H. Anastasiadis, Evridiki Patelarou, Minas M. Stylianakis.
PLA/MXene Nanocomposites Formation and Life Cycle Assessment.
In: Proceedings of the 3rd International Conference on Sustainable Chemical and Environmental Engineering (2024).

7. Publications in scientific journals

- V. Tzatzadakis and K. Tserpes.
Production of a novel bio-based structural adhesive and characterization of mechanical properties. The Journal of Adhesion. 2020 Jan 15:1-6.
- V. Tzatzadakis and K. Tserpes.
Experimental characterization of the hygrothermal ageing effects on the bulk mechanical properties and lap-shear strength of the novel bio-based epichlorohydrin/cardanol adhesive. The Journal of Adhesion. 2020 Sep 11:1-9.
- K. Tserpes, V. Tzatzadakis, and C. Katsiropoulos.
Effect of hygrothermal ageing on the interlaminar shear strength of carbon fiber-reinforced rosin-based epoxy bio-composites. Composite Structures. 2019 Oct 15;226:111211.
- K. Tserpes, V. Tzatzadakis, and J. Bachmann.
Electrical Conductivity and Electromagnetic Shielding Effectiveness of BioComposites. Journal of Composites Science. 2020 Mar;4(1):28.
- K. Tserpes and V. Tzatzadakis.
Tserpes, K., & Tzatzadakis, V. (2021). Synthesis and Experimental Characterization of a MWCNT-Filled Bio-Based Adhesive. Aerospace, 8(2), 26. https://doi.org/10.3390/aerospace8020026
- K. Tserpes and V. Tzatzadakis.
Life-cycle analysis and evaluation of mechanical properties of a bio-based structural adhesive. Aerospace, vol. 9, no. 2, p. 64, 2022.
- Vasileios Tzatzadakis, Alexandros Thomos, Franceska Gojda, Fanourios Krasanakis, Athanasios Skouras, Athina Patelarou, Michail Zografakis-Sfakianakis, Konstantinos Giakoumidakis, Kiriaki Chrissopoulou, Spiros H. Anastasiadis, Evridiki Patelarou, Minas M. Stylianakis.
Life-cycle analysis and evaluation of mechanical properties of a bio-based structural adhesive. Aerospace, vol. 9, no. 2, p. 64, 2022. (Submitted)
- Vasileios Tzatzadakis, Evi Giannakaki, Fanourios Krasanakis, Kiriaki Chrissopoulou, Spiros H. Anastasiadis, Evridiki Patelarou, Minas M. Stylianakis.
Comprehensive Life Cycle Assessment of Graphene Oxide Production via a Modified Hummers' Method and the Subsequent Chemical Reduction Process. (in preparation)