

Aikaterina Paraskevopoulou

Chemical Engineer, MSc, PhD Candidate | Analytical Chemistry Scientist

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EDUCATION

Ph.D. candidate in Chemical Engineering

School of Chemical Engineering, National Technical University of Athens (NTUA), Greece, in co-operation with Photo-catalytic Processes and Environmental Chemistry Laboratory, Institute of Nanoscience and Nanotechnology, NCSR Demokritos

Title: "Development of methods for the isolation and characterization of bioactive compounds from cyanobacteria biomass"

Advisors: Dimitra Dimotikali, Retired Professor of Chemical Engineering, NTUA

Theodoros M. Triantis, Senior Researcher B at NCSR "Demokritos"

Master's Degree in Materials Science and Technology (2016–2018)

National Technical University of Athens (NTUA), Greece

Integrated Master in Chemical Engineering (2009–2016)

National Technical University of Athens (NTUA), Greece

RESEARCH AND TECHNICAL SKILLS

- Development, optimization, and validation of analytical methods
- Liquid chromatography techniques (HPLC–PDA, LC–MS/MS, HILIC–MS/MS)
- Gas chromatography techniques (GC–MS/MS, GC×GC/MS, heart-cut GC–GC/MS, GC–O, static–headspace GC–O)
- Gas chromatography combustion isotope ratio mass spectrometry (GC/C/IRMS)
- Ion trap, triple-quadrupole and high-resolution mass spectrometry (Q–Orbitrap, Q–TOF)
- Metabolomics untargeted analysis and data interpretation using computational chemistry
- Extraction techniques (liquid-liquid, solid-liquid, SPME, HS–SPME, SPE, Soxhlet, ultrasounds)
- Normal and reverse phase chromatography, thin layer chromatography (TLC), gel filtration chromatography
- Automated solvent assisted flavor evaporation (aSAFE)
- Stable isotope dilution analysis (SIDA) and isotopically stable analogs synthesis
- Antioxidant activity and enzymatic inhibition bioassays
- Sonochemical synthesis of nanoparticles and characterization using X ray diffraction (XRD)
- Photocatalytic tests and analysis (UV–Vis)
- Troubleshooting analytical chemistry instruments

TEACHING EXPERIENCE

Chemistry Kinetics and Electrochemistry

Laboratory exercises, School of Chemical Engineering, NTUA, 4th semester (2020–2022)

Structure and Material Properties

Laboratory exercises, School of Chemical Engineering, NTUA, 3rd semester (2020–2022)

- Instructed second-year students in laboratory exercises, offering guidance and feedback to enhance their comprehension. Assumed responsibility for grading laboratory reports, ensuring students' grasp of concepts and techniques.

GRANTS–SCHOLARSHIPS

Research Grant-Short-Term Grant, 2023, titled "Identification of aroma compounds in spirulina food supplement", at the Leibniz Institute for Food Systems Biology at the Technical University of Munich (Leibniz-LSB@TUM) Freising, Germany, obtained from the German academic Exchange Service (DAAD).

Short Term Scientific Mission (STSM), 2023, titled "Characterization of important odorants in cyanobacteria biomass (Spirulina)", at the Leibniz Institute for Food Systems Biology at the Technical University of Munich (Leibniz-LSB@TUM), Freising, Germany, funded by COST Action: CA 18225.

PhD scholarship obtained from National Technical University of Athens Research Committee.

TRAINING SCHOOL PARTICIPATION

“Introduction to sensory analysis of water”. Istanbul University, Faculty of Aquatic Sciences, WaterTOP COST, ACTION 18225, 17–19 October 2022, Istanbul, Turkey.

“Advanced GC–MS techniques for the analysis of water Taste & Odor”. Leibniz Institute for Food Systems Biology at the Technical University of Munich (LSB) and WaterTOP COST Action 18225, 3–5 May 2022, Freising, Germany.

PROFESSIONAL EXPERIENCE

Mass Spectrometry technician | October 2024–Today

Mass Spectrometry Facility, Institute of Science and Technology, Austria (ISTA)

- Responsible person for two GC-MS systems and three LC-MS systems of low resolution.
- Person in charge for all the Chemistry & Materials services, including method development and data analysis using LC-MS, GC-MS and high-resolution MS systems.
- Person in charge for the training of scientists in LC-MS and GC-MS systems.
- Personally acknowledged in various publications from Chemistry research groups.

Research Associate | October 2023–September 2024

Leibniz Institute for Food Systems Biology at the Technical University of Munich (Leibniz-LSB@TUM)

- Expedited the identification of odor-active compounds in algae-based food products, resulting in a two-month acceleration of the process.
- Synthesized isotopically stable analogs to facilitate quantitation of odorants through Stable Isotope Dilution Analysis (SIDA).
- Demonstrated proficiency in swiftly assimilating new concepts within an autonomous work environment.
- Assumed a pivotal role in enhancing collaboration with algae-based food industries through comprehensive odor compound analysis.

Research Associate | June 2021–December 2022

Doping Control Laboratory of Athens, Institute of Biosciences and Applications, NCSR "Demokritos", Athens

- Validated quantification methods according to ISO 17025, enabling expedited results evaluation for EAAS Markers of the urinary steroid profile in athletes and horses.

• Contributed significantly (85%) to the validation process by devising protocols and composing comprehensive reports. Research Associate | February 2019–June 2022 Photo-Catalytic Processes and Environmental Chemistry Lab of Institute of Nanoscience and Nanotechnology, NCSR “Demokritos”, Athens

- Completed all experimental tasks outlined for the project, contributing significantly to the acquisition of funding.
- Contributed to various lab activities, including sample preparation, analysis of cyanotoxins and other secondary metabolites, results evaluation, and report writing, ensuring compliance with ISO 17025 standards.
- Played a significant role in report writing, contributing to 80 % of the content.
- Leveraged expertise to contribute to additional research projects, such as analysis of explosives in water and soil samples, demonstrating adaptability and flexibility.

Internship | September 2013–November 2013

General Chemistry of the Hellenic State, A' Chemical Service of Athens

- Contributed on the analysis of olive oils and the results evaluation.

RESEARCH PUBLICATIONS

• **A. Paraskevopoulou**, V. Mall, T.M. Triantis, T. Kaloudis, A. Hiskia, D. Dimotikali, M. Steinhaus, “Deciphering Important Odorants in a Spirulina (*Arthrospira platensis*) Dietary Supplement by Aroma Extract Dilution Analysis Using Offline and Online Fractionation Approaches”. *Int. J. Mol. Sci.* (2025), 26:6767.

• **A. Paraskevopoulou**, T. Kaloudis, A. Hiskia, M. Steinhaus, D. Dimotikali, T.M. Triantis, “Volatile profiling of spirulina food supplements”, *Foods* (2024), 13(8):1257.

• **A. Paraskevopoulou**, P. Pandis, C. Argiris, G. Sourkouni, “Sonochemical Synthesis of Indium Nitride Nanoparticles and Photocatalytic Composites with Titania”, *Ceramics*, (2024), 7 (2):478-491.

• R. Akcaalan, R. Devesa-Garriga, A. Dietrich, M. Steinhaus, A. Dunkel, V. Mall, M. Manganelli, S. Scardala, E. Testai, G. A. Codd, F. Kozisek, M. Antonopoulou, A.R.L. Ribeiro, M. J. Sampaio, A. Hiskia, T.M. Triantis, D.D. Dionysiou, G.L. Puma, L. Lawton, C. Edwards,

H.R.Andersen, D. Fatta-Kassinos, P. Karaolia, K. Panksep, S.-K. Zervou, M. Albay, L. Koker, E. Chernova, S. Iliakopoulou, E. Varga, P.M. Visser, A.I. Gialleli, Z. Zengin, N. Deftereos, P. Miskaki, C. Christophoridis, **A. Paraskevopoulou**, T.-F. Lin, A. Zamyadi, G. Dimova, T. Kaloudis, "Water taste and odor (T&O): Challenges, gaps and solutions from a perspective of the WaterTOP network", Chemical Engineering Journal Advances, (2022), 12:1-9.

- N.A. Hammoud, S.-K. Zervou, T. Kaloudis, C. Christophoridis, **A. Paraskevopoulou**, T.M. Triantis, K. Slim, J. Szpunar, A. Fadel, R. Lobinski, A. Hiskia, "Investigation of the Occurrence of Cyanotoxins in Lake Karaoun (Lebanon) by Mass Spectrometry, Bioassays and Molecular Methods", Toxins, (2021), 13 (394):1-20.

- S.-K. Zervou, K. Moschandreu, **A. Paraskevopoulou**, C. Christophoridis, E. Grigoriadou, T. Kaloudis, T.M. Triantis, V. Tsiaoussi, A. Hiskia, "Cyanobacterial Toxins and Peptides in Lake Vegoritis, Greece", Toxins, (2021), 13 (716):1-21.

- Y. Vergou, M. Touraki, **A. Paraskevopoulou**, T. M. Triantis, A. Hiskia, S. Gkelis, "β-N-methylamino-L- alanine Interferes with Nitrogen Assimilation in the Cyanobacterium, non-BMAA Producer, Synechococcus sp. TAU-MAC 0499", TOXCON, (2020), 185:147-155.

CONFERENCE PRESENTATIONS

- **A. Paraskevopoulou**, V. Mall, T. M. Triantis, T. Kaloudis, A. Hiskia, D. Dimotikali, and M. Steinhaus, "Screening of odor-active compounds in spirulina biomass". ISAP 2024, 16-21 June 2024, Porto, Portugal.

- **A. Paraskevopoulou**, T. Kaloudis, A. Hiskia and T.M. Triantis, "Determination of Volatile compounds in Spirulina food supplements using HS-SPME – GC/MS". IMA 2021, 20-23 September 2021, Virtual Conference.

- **A. Paraskevopoulou**, T. Kaloudis, S. Gkelis, U. Lortou, M. Panou, A. Hiskia, T.M. Triantis, "Optimized methods for the extraction of C-phycocyanin and β-carotene from Arthrospira spp. (Spirulina) and their application to microalgae isolated from Greece". IMA 2021, 20-23 September 2021, Virtual Conference.

- N. Hammoud, S.-K.i Zervou, T. Kaloudis, **A. Paraskevopoulou**, C. Christophoridis, T.M. Triantis, A. Hiskia, J. Szpunar, K. Slim, R. Lobinski, "Investigation on the occurrence of cyanobacterial secondary metabolites in Lebanese lake Karaoun using mass spectrometry and molecular techniques". SETAC Europe 2021, 3-6 May 2021, Virtual Conference.

- **A. Paraskevopoulou**, C. Argiris: "Synthesis and characterization of nanocomposite materials based on titanium dioxide for photocatalytic applications". 12th Panhellenic Scientific Conference on Chemical Engineering, Evgenidou Foundation, 29-31 May 2019, Athens, Greece.

- **A. Paraskevopoulou**, A. Oreopoulou, D. Tsimogiannis and V. Oreopoulou: "Valorization of pink savory through essential oil distillation and alkaline extraction of phenolic compounds". Poster at the 4th International ISEKI_Food Conference, 6-8 July 2016, Vienna, Austria.

- **A. Paraskevopoulou**, A. Bimpilas, D. Tsimogiannis, V. Oreopoulou: "Optimization study for the recovery of bioactive compounds from the aromatic plant Satureja thymbra". 10th Panhellenic Scientific Conference on Chemical Engineering, Conference & Cultural Center of the University of Patras, 4-6 June 2015, Patras, Greece.

OTHER SKILLS

Languages English (ECCE, B2) | French (Delf B1) | German (A1)

Computer skills Origin | Statistica | AMDIS | Xcalibur | MS Workstation | Chromspace | GC Image | MassHunter
Chromeleon | Cytoscape | MZmine3