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### Education

**B.Sc. in Chemistry (2009-2013)**, University of Athens, Grade: 9.18/10.00

**M.Sc. in Chemical Analysis-Quality Control (2013-2015)**, University of Athens, Grade 9.65/10.00

**M.Sc. in Data Science (2020-2022)**, University of Peloponnese, Grade 9.09/10.00

**Ph.D. in Analytical Chemistry (2015-2019)**, University of Athens, Grade Excellent

### Research Topic

#### Ph.D. Thesis

**Development of novel methodologies for the identification of unknown compounds in the environment employing non-target screening and high-resolution mass spectrometry**

The objective of the thesis was to develop novel workflows employing state-of-the-art target, suspect and non-target screening tools and apply them on samples obtained from important European ecosystems such as the Danube River Basin (DRB) and the Black Sea (BS). More information is available in the following publications: [10.1016/j.trac.2019.04.008](https://doi.org/10.1016/j.trac.2019.04.008), [10.1021/acs.est.8b00365](https://doi.org/10.1021/acs.est.8b00365), [10.1016/j.envint.2019.03.060](https://doi.org/10.1016/j.envint.2019.03.060) and [10.1016/j.scitotenv.2019.04.445](https://doi.org/10.1016/j.scitotenv.2019.04.445).

#### Master Thesis

**Implementation of chemometric techniques for the detection and non-target identification of analytes with distinguished time pattern in wastewater by LC-Q-TOF**

The aim of this proposal was to implement a computational methodology that would facilitate the detection of contaminants with high fluctuation in intensity among wastewater samples sampled in time-series. The output of this methodology was a compound table with top-prioritized components. The identity of the top-ranked components was revealed by non-target identification workflows. More information is available at the publication [10.1016/j.jhazmat.2018.08.073](https://doi.org/10.1016/j.jhazmat.2018.08.073).

#### Undergraduate Thesis

**Determination of drugs of abuse and their metabolites in wastewater by LC-MS/MS (QQQ)**

The objective of this study was to determine the concentration levels of illicit drugs and their metabolites in wastewater samples and the receiving environment. Concentration levels from wastewater samples were used to estimate the consumption of the drugs by the society (sewage epidemiology). More information is available in the publication [10.1021/acs.est.6b02417](https://doi.org/10.1021/acs.est.6b02417) and [10.1016/j.scitotenv.2015.09.145](https://doi.org/10.1016/j.scitotenv.2015.09.145).

## Research Interests

- Automated data processing workflows for LC and GC-HRMS
- Advanced statistics and chemometrics techniques for prioritization of peaks in LC and GC-HRMS
- Identification of unknown compounds using not-target screening workflows
- Digital archivation of LC and GC-HRMS chromatograms
- Wide-scope retrospective screening of emerging contaminants in digitally-archived samples
- Strategies for the identification of river basin specific pollutants
- Application of bioassays to assess the biological responses of environmental samples
- Determination of antibiotics, their transformation products (TPs), antibiotic resistant bacteria and genes (ARB&ARGs)
- Application of prioritization decision trees to propose emerging contaminants for regulation
- Investigation of the fate of emerging contaminants in the environment
- New emerging technologies to achieve the widest possible chemical coverage (e.g. use of Hydrophilic interaction chromatography (HILIC) in monitoring)
- Big data, construction of databases and interfaces

## Publications in scientific journals

- P1. Wiebke Dürig, Sofia Lindblad, Oksana Golovko, Georgios Gkotsis, Reza Aalizadeh, Maria-Christina Nika, Nikolaos Thomaidis, Nikiforos A. Alygizakis, Merle Plassmann, Peter Haglund, Qiuguo Fu, Juliane Hollender, Jade Chaker, Arthur David, Uwe Kunkel, André Macherius, Lidia Belova, Giulia Poma, Hugues Preud'Homme, Catherine Munsch, Lutz Ahrens, **“What is in the fish? Collaborative trial in suspect and non-target screening of organic micropollutants using LC- and GC-HRMS”**, *Environment International*, 2023, 181, 108288 (DOI: [10.1016/j.envint.2023.108288](https://doi.org/10.1016/j.envint.2023.108288))
- P2. Juliane Hollender, Emma L. Schymanski, Lutz Ahrens, Nikiforos Alygizakis, Frederic Béen, Lubertus Bijlsma, Andrea M. Brunner, Alberto Celma, Aurelie Fildier, Qiuguo Fu, Pablo Gago-Ferrero, Ruben Gil-Solsona, Peter Haglund, Martin Hansen, Sarit Kaserzon, Anneli Krueve, Marja Lamoree, Christelle Margoum, Jeroen Meijer, Sylvain Merel, Cassandra Rauert, Pawel Rostkowski, Saer Samanipour, Bastian Schulze, Tobias Schulze, Randolph R. Singh, Jaroslav Slobodnik, Teresa Steininger-Mairinger, Nikolaos S. Thomaidis, Anne Togola, Katrin Vorkamp, Emmanuelle Vulliet, Linyan Zhu, Martin Krauss, **“NORMAN Guidance on Suspect and Non-Target Screening in Environmental Monitoring”**, *Environmental Science Europe*, 2023, 35, 75 (DOI: [10.1186/s12302-023-00779-4](https://doi.org/10.1186/s12302-023-00779-4))
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- P4. Shinji Ozaki, Paola Movalli, Alessandra Cincinelli, Nikiforos Alygizakis, Alexander Badry, Jacqueline S. Chaplow, Daniela Claßen, René W. R. J. Dekker, Beverley Dodd, Guy Duke, Jan Koschorreck, Gloria Dos Santos Pereira, Elaine Potter, Jaroslav Slobodnik, Sarah Thacker, Nikolaos S. Thomaidis, Gabriele Treu, and Lee Walker, **“Results of 19-year monitoring providing time-trend models for 14 essential and non-essential elements in the liver of the Common buzzard (*Buteo buteo*) in the United Kingdom”**, *Environmental Pollution*, 2023, 323, 121308 (DOI: [10.1016/j.envpol.2023.121308](https://doi.org/10.1016/j.envpol.2023.121308))
- P5. Paola Movalli, Koos Biesmeijer, Georgios Gkotsis, Nikiforos Alygizakis, Maria-Christina Nika, Kostantinos Vasilatos, Marios Kostakis, Nikos Thomaidis, Peter Oswald, Martina Oswaldova, Jaroslav

- Slobodnik, Natalia Glowacka, Jos Hooijmeijer, Ruth Howison, Rene Dekker, Nico van den Brink, Theunis Piersma, **“High resolution mass spectrometric suspect screening, wide-scope target analysis of emerging contaminants and determination of legacy pollutants in adult western blacktailed godwit *Limosa limosa limosa* in The Netherlands – a pilot study”**, Chemosphere, 2023, 321, 138145 (DOI: [10.1016/j.chemosphere.2023.138145](https://doi.org/10.1016/j.chemosphere.2023.138145))
- P6. Nikiforos Alygizakis, Kelsey Ng, Niki Maragou, Sylvana Alirai, Peter Behnisch, Harrie Besselink, Peter Oswald, Ľuboš Čirka, Nikolaos S. Thomaidis, Jaroslav Slobodnik, **“Battery of In Vitro Bioassays: A Case Study for the Cost-Effective and Effect-Based Evaluation of Wastewater Effluent Quality”**, Water, 2023, 15, 4 (DOI: [10.3390/w15040619](https://doi.org/10.3390/w15040619))
- P7. Nikiforos Alygizakis, Francois Lestremou, Pablo Gago-Ferrero, Rubén Gil-Solsona, Katarzyna Arturi, Juliane Hollender, Emma L. Schymanski, Valeria Dulio, Jaroslav Slobodnik, Nikolaos S. Thomaidis, **“Towards a harmonized identification scoring system in LC-HRMS/MS based non-target screening (NTS) of emerging contaminants”**, TrAC Trends in Analytical Chemistry, in press (DOI: [10.1016/j.trac.2023.116944](https://doi.org/10.1016/j.trac.2023.116944))
- P8. Kelsey Ng, Nikiforos Alygizakis, Nikolaos S. Thomaidis, Jaroslav Slobodnik, **“Wide-Scope Target and Suspect Screening of Antibiotics in Effluent Wastewater from Wastewater Treatment Plants in Europe”**, antibiotics, 2023, 12, 100 (DOI: [10.3390/antibiotics12010100](https://doi.org/10.3390/antibiotics12010100))
- P9. Kelsey Ng, Nikiforos Alygizakis, Maria-Christina Nika, Aikaterini Galani, Peter Oswald, Martina Oswaldova, Ľuboš Čirka, Uwe Kunkel, André Macherius, Manfred Sengl, Giulio Mariani, Simona Tavazzi, HelleSkejo, Bernd M.Gawlik, Nikolaos S. Thomaidis, Jaroslav Slobodnik, **“Wide-scope target screening characterization of legacy and emerging contaminants in the Danube River Basin by liquid and gas chromatography coupled with high-resolution mass spectrometry”**, Water Research, in press (DOI: [10.1016/j.watres.2022.119539](https://doi.org/10.1016/j.watres.2022.119539))
- P10. Maria-Christina Nika, Nikiforos Alygizakis, Olga S. Arvaniti, Nikolaos S. Thomaidis, **“Non-target screening of emerging contaminants in landfills: A Review”**, Current Opinion in Environmental Science & Health, 2023, 32, 100430 (DOI: [10.1016/j.coesh.2022.100430](https://doi.org/10.1016/j.coesh.2022.100430))
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- P17. Paola Movalli, Jan Koschorreck, Gabriele Treu, Jaroslav Slobodnik, Nikiforos Alygizakis, Andreas Androulakakis, et al., **"The role of natural science collections in the biomonitoring of environmental contaminants in apex predators in support of the EU's zero pollution ambition"**, Environmental Sciences Europe, 2022, 34, 38 (doi: [10.1186/s12302-022-00670-8](https://doi.org/10.1186/s12302-022-00670-8))
- P18. Alexander Badry, Heinz Rüdell, Bernd Göckener, Maria-Christina Nika, Nikiforos Alygizakis, Georgios Gkotsis, Nikolaos S. Thomaidis, Gabriele Treu, Rene W. R. J. Dekker, Paola Movalli, Lee A. Walker, Elaine D. Potter, Alessandra Cincinelli, Tania Martellini, Guy Duke, Jaroslav Slobodnik, Jan Koschorreck, **"Making use of apex predator sample collections: an integrated workflow for quality assured sample processing, analysis and digital sample freezing of archived samples"**, 2022, Chemosphere, 2022, 309, Part I, 136603 (doi: [10.1016/j.chemosphere.2022.136603](https://doi.org/10.1016/j.chemosphere.2022.136603)).
- P19. Andreas Androulakakis, Nikiforos Alygizakis, Erasmia Bizani, Nikolaos S. Thomaidis, **"Current progress in the environmental analysis of poly- and perfluoroalkyl substances (PFAS). A review"**, 2022, Environmental Science: Advances, (doi: [10.1039/D2VA00147K](https://doi.org/10.1039/D2VA00147K))
- P20. Nikiforos Alygizakis, Theodoros Giannakopoulos, Nikolaos S. Thomaidis, Jaroslav Slobodnik, **"Detecting the sources of chemicals in the Black Sea using non-target screening and deep learning convolutional neural networks"**, Science of The Total Environment, 2022, 847, 157554 (doi: [10.1016/j.scitotenv.2022.157554](https://doi.org/10.1016/j.scitotenv.2022.157554))
- P21. Kelsey Ng, Nikiforos Alygizakis, Andreas Androulakakis, Aikaterini Galani, Reza Aalizadeh, Nikolaos S. Thomaidis, Jaroslav Slobodnik, **"Target and suspect screening of 4,777 per- and polyfluoroalkyl substances (PFAS) in river water, wastewater, groundwater and biota samples in the Danube River Basin"**, Journal of Hazardous Materials, 2022, 436, 129276 (doi: [10.1016/j.jhazmat.2022.129276](https://doi.org/10.1016/j.jhazmat.2022.129276))
- P22. Reza Aalizadeh, Varvara Nikolopoulou, Nikiforos Alygizakis, and Nikolaos S. Thomaidis, **"First Novel Workflow for Semiquantification of Emerging Contaminants in Environmental Samples Analyzed by Gas Chromatography–Atmospheric Pressure Chemical Ionization–Quadrupole Time of Flight–Mass Spectrometry"**, Analytical Chemistry, 2022, 94, 27, 9766-9774, (doi: [10.1021/acs.analchem.2c01432](https://doi.org/10.1021/acs.analchem.2c01432))
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- P29. Alexander Badry, Gabriele Treu, Georgios Gkotsis, Maria-Christina Nika, Nikiforos Alygizakis, Nikolaos S. Thomaidis, Christian C. Voigt, Oliver Krone, **"Ecological and spatial variations of legacy and emerging contaminants in white-tailed sea eagles from Germany: Implications for prioritisation and future risk management"**, Environment International, 2022, 158, 106934 (doi: [10.1016/j.envint.2021.106934](https://doi.org/10.1016/j.envint.2021.106934))
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## Conferences Presentations

> 50 conference participations. The most recent conference participations are shown below:

- C1. G. L. Malm, J. Liigand, R. Aalizadeh, N. Alygizakis, N. Thomaidis, A. Krueve “**Evaluation of quantification approaches without analytical standards in non-targeted screening using LC/ESI/HRMS**”, International Conference on Non-Target Screening, 16-19/10/2023, Erding, Germany (oral presentation)
- C2. N. Alygizakis, K. Ng, Ľ. Čirka, F. Cerqueira, G. Deviller, G. Fortunato, I. Iakovidis, I. Kampouris, I. Michael-Kordatou, F.Y. Lai, L. Lundy, C.M. Manaia, R.B.M. Marano, G.K. Paulus, E. Radu, K. Šlipko, N.S. Thomaidis, V. Ugolini, I. Vaz-Moreira, J. Slobodnik, Despo Fatta-Kassinou “**The NORMAN Antibiotic Resistance Bacteria and Genes Database (NORMAN ARB&ARG): let’s collaborate to manage risk of Antibiotic Resistance**”, 18<sup>th</sup> International conference on environmental science & technology CEST2023, 30/08-02/09/2023, Athens, Greece (poster presentation)
- C3. S. Alirai, R. Gil-Solsona, N. Alygizakis, N.S. Thomaidis, M. Marquès, P. Gago-Ferrero “**Holistic investigation of PFAS in pregnant women biological samples**”, 18<sup>th</sup> International conference on environmental science & technology CEST2023, 30/08-02/09/2023, Athens, Greece (poster presentation)
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- C6. K. Ng, N. Alygizakis, N. Thomaidis, J. Slobodnik “**Wide-scope target and suspect screening of antibiotics in effluent wastewater from wastewater treatment plants in Europe**”, 18<sup>th</sup> International conference on environmental science & technology CEST2023, 30/08-02/09/2023, Athens, Greece (oral presentation)
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- C10. K. Ng, N. Alygizakis, A. Androulakakis, A. Galani, R. Aalizadeh, N. Thomaidis and J. Slobodnik

- “Investigation of PFAS pollution in the DRB”, SETAC Europe 33<sup>rd</sup> annual meeting, 30/04-04/05/2023, Dublin, Ireland (oral presentation)
- C11. N. Alygizakis, K. Ng, N. Maragou, S. Alirai, P. Behnisch, H. Besselink, P. Oswald, Ľ. Čirka, J. Slobodnik, N. Thomaidis “**Cost-effective and effect-based evaluation of the wastewater quality using a battery of *in vitro* bioassays**”, SETAC Europe 33<sup>rd</sup> annual meeting, 30/04-04/05-2023, Dublin, Ireland (poster presentation)
- C12. S. Ozaki, P. Movalli, A. Cincinelli, N. Alygizakis, A. Badry, J.S. Chaplow, D. Claßen, R.W.R.J. Dekker, B. Dodd, G. Duke, J. Koschorreck, M.G. Pereira, E. Potter, J. Slobodnik, S. Thacker, N. S. Thomaidis, G. Treu, L. Walker “**Influence of seasonality on the temporal trend assessment of wildlife exposure to second generation anticoagulant rodenticides: a case study for UK Common Buzzards (*Buteo buteo*) from 2001 to 2019**”, SETAC Europe 33<sup>rd</sup> annual meeting, 30/04-04/05/2023, Dublin, Ireland (poster presentation)
- C13. P. Movalli, A. Cincinelli, S. Ozaki, N. Alygizakis, A. Androulakakis, A. Badry, R.W.R.J Dekker, G. Duke, G. Gkotsis, N. Glowacka, H.A.H. Jansman, J. Koschorreck, M.C. Nika, S. Santini, C. Sarti, J. Slobodnik, N.S. Thomaidis, G. Treu, N.W. van den Brink, L. Walker “**Time trends in PCB and PBDE congeners and in ΣPCBs and ΣPBDEs residue concentrations in the common buzzard *Buteo buteo* in the Netherlands 1994-2020 in relation to restrictions on chemicals use**”, SETAC Europe 33<sup>rd</sup> annual meeting, 30/04-04/05/2023, Dublin, Ireland (poster presentation)
- C14. P. Van den Brink, A. Koch, A. Bado-Nilles, G. Treu, G. Alurralde, M. Soto, P. von der Ohe, H. Hollert, M. Muz, N. Lopez-Herguedas, I. Alvarez-Mora, B.I. Escher, E. Cody, R. Beaudouin, B. González-Gaya, F. Sylvester, J. Moe, M. Bundschuh, N. Alygizakis, U. Hommen, H. Wilkinson, J. de Jonge, K. Ng, M. Liess, N. Pucheux, S. Finckh, T. Schulze, Y. Verhaegen, A. Rico “**NORMAN Workshop: Improving the Use of (Semi-) Field Data for the Risk Assessment of Chemicals**”, SETAC Europe 33<sup>rd</sup> annual meeting, 30/04-04/05/2023, Dublin, Ireland (poster presentation)

## Participation in projects

### Major grants (≥100k €)

1. 2023-2026: **TerraChem**, From soils to apex species: chemical pathways, effects and impacts on terrestrial biodiversity and ecosystem services and applications for better chemicals management, (European Union). Total project budget: 6,4 M €
2. 2022-2027: **European partnership for the assessment of risks from chemicals (PARC)**, Total project budget: 400 M €. Budget for NKUA: 1.3 M €
3. 2018-2022: **LIFE APEX**, Systematic use of contaminant data from apex predators and their prey in chemicals management, LIFE17 ENV/SK/000355 (European Union). Total project budget: 3,3 M €
4. 2019: **EMBLAS PLUS**, EU/UNDP Project: Improving environmental monitoring in the Black Sea. Analysis of water framework priority substances and screening of black sea specific pollutants in water biota and sediment samples obtained during the National Pilot Monitoring Studies and Joint Open Sea Surveys and risk assessment of identified pollutants (UNDP). Total project budget: 3.8 M €
5. 2019: **JDS4**, Joint Danube Survey 4 funded by the International Commission for the Protection of the Danube River (ICPDR). Total project budget: ~100k €

### Smaller grants (<100k €)

1. 2019-2022: **Screening study on hazardous substances in marine mammals of the Baltic Sea** (project number I49847) funded by the German Environment Agency.
2. 2019-2022: **CONnECT project**: Wide-scope target and suspect screening of emerging contaminants and their transformation products in marine biota samples from the North-East Atlantic

3. 2020-2022: **HELCOM Pre-EMPT: Pre-empting pollution by screening for possible risks.** Funded by the Nordic Environment Finance Corporation (NEFCO) under the Baltic Sea Action Plan Fund.
4. 2020: **Monitoring of Dnieper river** basin funded by the EU-funded program European Union Water Initiative Plus for Eastern Partnership Countries (EUWI+)
5. 2019-2024: **NORMAN Annual Joint Program of Activities** for the following actions: NormaNEWS and retrospective screening, NORMAN Database System, Suspect list exchange (SLE), Substance Database (SusDat), Digital Sample Freezing Platform. Intercolaborative trial on suspect screening in biota. Collaborative trial for the intercomparison of ion mobility separation data. Prioritization of contaminants of emerging concern. Water reuse working group
6. 2019: **Investigative monitoring of the Dniester River Basin** funded by the Organization for Security and Co-operation in Europe (OSCE)
7. **Investigative monitoring of the Dnieper river basin** funded by the EU-funded program European Union Water Initiative Plus for Eastern Partnership Countries (EUWI+)
8. 2018: **Research on identification of chemical status of surface and ground water bodies of the Siverskyi Donets river** by the Organization for Security and Co-operation in Europe (OSCE)
9. 2017-2022: **Strengthening of Capacities for Implementation of the Water Framework Directive in Montenegro** Contract No.383-638 EuropeAid/I38151/DH/SER/ME.

## Scholarships

1. 2016-2019: Marie Skłodowska-Curie Fellowship at **ANSWER Project** (Grant agreement No 675530)
2. 2013-2015: Scholarship **John S. Latsis Foundation** for graduate studies
3. 2010-2013: Scholarship Antonios Papadakis, University of Athens (granted after exams)
4. **2011-2012&2012-2013**: Award from University of Athens (Heritage of Pantia Ralli) for high performance among students of department of Chemistry, University of Athens
5. 2011-2012: Award State Scholarships Foundation «**IKY**» for academic performance during 5th - 6th semesters of under graduate studies.

## Awards

1. Best poster award for the poster Alirai et al., 2023 (CEST2023 conference) awarded by the Chemical Engineering Journal
2. Alygizakis et al., 2022 (DOI: [10.3390/metabo12030199](https://doi.org/10.3390/metabo12030199)) was included in the “Hot topic papers published in 2022” in the “Bioinformatics and Data Analysis” section of Metabolites
3. Editor excellent reviewer award by Journal of Hazardous Materials for year 2021
4. Alygizakis et al., 2020 (DOI: [10.1016/j.trac.2020.116125](https://doi.org/10.1016/j.trac.2020.116125)) was included in the most downloaded publication in Trends in Analytical chemistry in 2020
5. Gago-Ferrero et al., 2020 (DOI: [10.1016/j.jhazmat.2019.121712](https://doi.org/10.1016/j.jhazmat.2019.121712)) was editor-selected outstanding paper for 2020 for Journal of Hazardous Materials
6. Paulus et al., 2019 (DOI: [10.1016/j.ijheh.2019.01.004](https://doi.org/10.1016/j.ijheh.2019.01.004)) was awarded with the Atlas award by the International Journal of Hygiene & Environmental Health
7. Best poster award for the poster Gkotsis et al., 2019 (ICCE2019 conference)
8. Best poster award for the poster Nika et al., 2018 (AACD2018 conference)



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### **Professional Affiliations**

- NORMAN Association (2015-present)
- COST Actions: SCORE ESI 307, NEREUS ESI 403, ERB Facility CA16224
- Hellenic Society of Mass Spectrometry (2015-present)
- Association of Greek Chemists (2013-present)

### **Contact information**

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