



## ► Sofia K. Drakopoulou

**Post-doctoral Researcher** at NKUA  
**Co-founder of Track4Value**, NKUA spinoff

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### Education

**B.Sc. in Chemistry (2011-2016)**, National and Kapodistrian University of Athens, Grade: 7.12/10

**M.Sc. in Analytical Chemistry (2016-2018)**, National and Kapodistrian University of Athens, Grade: 9.57/10

**Ph.D. in Analytical Chemistry (2018-2022)**, National and Kapodistrian University of Athens

**Post-Doctoral research in Analytical Chemistry (2022-today)**, National and Kapodistrian University of Athens

### Research Topics

**Undergraduate Thesis:** “Development of a mass spectral database for targeted screening of emerging pollutants using LC-QTOF-MS”, Laboratory of Analytical Chemistry, Chemistry department, University of Athens, Greece (2014-2015).

**Master Thesis:** “Targeted metabolomics as an advanced tool for the detection of pomegranate juice adulteration”, Laboratory of Analytical Chemistry, Chemistry department, University of Athens, Greece (2016-2018).

**PhD Thesis:** “Development of advanced high-resolution mass spectrometry methods for the thorough characterization of olive oil”, Laboratory of Analytical Chemistry, Chemistry department, University of Athens, Greece (2018-2022).

**Post-doctoral Research:** Development of HRMS target, suspect and non-target screening methodologies combined with chemometrics to ensure food authenticity and detect adulteration.

### Research Interests

**General research interests:** Food Authenticity and Adulteration, Food Safety, Metabolomics, High Resolution Mass Spectrometry (HRMS), Trapped Ion Mobility (TIMS),

Direct Analysis in Real Time (DART), method development, HRMS data treatment and chemometrics.

### Projects:

- **2023-2024:** Increasing the competitiveness and supporting sustainability of Greek livestock and feta production through authentic documentation of Greek sheep and goat milk (funding: Hellenic Ministry of Rural Development and Food).
- **2022-2023:**, Safe Food for Infants in China and the EU, “SAFFI”.
- **2022:** Cardioprotective properties of farming gilthead sea bream enriched with biologically active lipids from olive oil by-products, “ELAIOTSIPOURA” (funding: Avramar-Nireus).
- **2018-2022:** Development of advanced high-resolution mass spectrometry (HRMS) methods for the thorough characterization of olive oil (Ph.D. Thesis).
- **2019-2021:** Chemical characterization and discrimination of wines Assyrtiko’s variety, cultivated in Santorini, under the vinification of “7 villages” (Sigalas).
- **2018-2021:** Emblematic action - The Olive Road (funding: Ministry of Education)
- **2018-2021:** Novel wide-scope research for the promotion of N. Aegean olive oil and olive products through the designation of their unique characteristics and bioactive content (funding: North Aegean Region).
- **2018: EMBLAS II**, 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.
- **2016-2018:** Targeted metabolomics for the detection of pomegranate juice adulteration (M.Sc. Thesis).
- **2014-2015:** Development of a mass spectral database for targeted screening of emerging pollutants using LC-QTOF-MS (B.Sc. Thesis).

### Publications

- **Sofia K. Drakopoulou**, Anastasia S. Kritikou, Carsten Baessmann, Nikolaos S. Thomaidis, “Untargeted 4D-metabolomics using Trapped Ion Mobility combined with LC-HRMS in extra virgin olive oil adulteration study with lower-quality olive oils”, Food Chemistry, **2023**, DOI: 10.1016/j.foodchem.2023.137410.
- **Sofia Drakopoulou**, Emmanouil Orfanakis, Ioulia Karagiannaki, Fragiskos Gaitis, Stavroula Skoulika, Andreas Papaioannou, George Boukouvalas, George Petropoulos, Vassilios Katsoudas, Renate Kontzedaki, Aggelos Philippidis, Aikaterini Zoumi, Marilena Dasenaki, Nikolaos S. Thomaidis, Michalis Velegrakis, “Comparative Evaluation of Different Targeted and Untargeted Analytical Approaches to Assess Greek Extra Virgin Olive Oil Quality and Authentication”, Molecules, **2022**, DOI: 10.3390/molecules27041350.
- **Sofia K. Drakopoulou**, Dimitrios E. Damalas, Carsten Baessmann, Nikolaos S. Thomaidis “Trapped Ion Mobility Incorporated in LC-HRMS Workflows as an Integral

Analytical Platform of High Sensitivity: Targeted and Untargeted 4D-Metabolomics in Extra Virgin Olive Oil”, J. Agric. Food Chem. **2021**, DOI: 10.1021/acs.jafc.1c04789

- Dasenaki ME, **Drakopoulou SK**, Katsianou PA, Martakos I, Thomaidis NS, “Authentication of Olive Products with Liquid Chromatographic techniques in Chromatographic and Related Separation Techniques in Food Integrity and Authenticity”, Volume B: Relevant Applications by Oscar Núñez and Guillem Campmajó (Eds), World Scientific Publishing, London, UK, **2021**, DOI: 10.1142/9781786349972\_0003
- **Sofia K. Drakopoulou**, Dimitrios E. Damalas, Carsten Baessmann, Nikolaos S. Thomaidis, “Potential of Trapped Ion Mobility combined with LC-HRMS in Food Authenticity Studies / Identification and Characterization of Secoiridoids Isomers found in Greek Extra Virgin Olive Oil (EVOO)”, Bruker Poster Note, **2019**.
- Marilena E. Dasenaki, **Sofia K. Drakopoulou**, Reza Aalizadeh, Nikolaos S. Thomaidis “Targeted and Untargeted Metabolomics as an Enhanced Tool for the Detection of Pomegranate Juice Adulteration”, Foods, **2019**, DOI: 10.3390/foods8060212

## Patents

- European Patent EP22201755.0 entitled “A method for evaluating the authenticity of food products and a system thereof”, Nikolaos S. Thomaidis, Reza Aalizadeh, **Sofia K. Drakopoulou**, Anastasia S. Kritikou, (submitted October 14th, **2022**).

## Conference Presentations

- **Sofia K. Drakopoulou**, “Holistic HRMS workflows for extra virgin olive oil authenticity assessment: Exploiting Trapped Ion Mobility superiority to unveil adulteration with lower-quality olive oils”, 5<sup>th</sup> Yale Symposium on Olive Oil & Health, **2023**, Oliveira do Hospital, Portugal (oral presentation, **invited speaker**).
- Reza Aalizadeh, Anastasia S. Kritikou, **Sofia K. Drakopoulou**, Matthew Clabaugh, Carsten Baessmann, Nikolaos S. Thomaidis “*Integrated machine learning-based approach to evaluate authenticity in various food matrices via MALDI-TOF-MS technology*”, 71<sup>st</sup> American Society for Mass Spectrometry (ASMS), **2023** Houston, USA (poster presentation).
- **Sofia K. Drakopoulou**, “*Application of trapped ion mobility mass spectrometry for food research*”, 10<sup>th</sup> International Symposium on Recent Advances in Food Analysis, RAFA, **2022**, Prague, Czech Republic (oral presentation at Bruker’s vendor seminar, **invited speaker**).
- **Sofia K. Drakopoulou**, Anastasia S. Kritikou, Carsten Baessmann, Nikolaos S. Thomaidis, “*Trapped Ion Mobility combined with LC-HRMS for high-performance 4D-Metabolomics in food authenticity: Extra virgin olive oil adulteration study with olive oils of lower quality*”, 10<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2022**, Prague, Czech Republic (poster presentation).

- Anastasia S. Kritikou, **Sofia K. Drakopoulou**, Marilena E. Dasenaki, Carsten Baessmann, Ioannis Skoufos, Athina Tzora, Nikolaos S. Thomaidis, “*RP- & HILIC-HRMS analytical platforms incorporated with Trapped Ion Mobility Mass Spectrometry for targeted & untargeted 4D-metabolomics: Animal muscle tissues authenticity assessment as a case study*”, 10<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2022**, Prague, Czech Republic (poster presentation).
- Georgios A. Koulis, Panagiota A. Katsianou, **Sofia K. Drakopoulou**, Anastasia S. Kritikou, Marilena E. Dasenaki, Charalampos Proestos, Nikolaos S. Thomaidis “*Targeted and untargeted HRMS metabolomic study in PDO Greek olive drupes for varietal and geographical origin verification*”, Athens Conference on Advances in Chemistry (ACAC), **2022**, Athens, Greece (poster presentation).
- Anastasia S. Kritikou, **Sofia K. Drakopoulou**, Marilena E. Dasenaki, Richard T. Seitz, Carsten Baessmann, Nikolaos S. Thomaidis “*Untargeted 4D-metabolomics in animal tissues’ authenticity assessment, exploiting RP- & HILIC-HRMS analytical platforms incorporated with Trapped Ion Mobility Mass Spectrometry*”, 70<sup>th</sup> American Society for Mass Spectrometry (ASMS), **2022**, Minneapolis, USA (poster presentation).
- **Sofia K. Drakopoulou**, Stefanos E. Kokolakis, Marilena E. Dasenaki, Anastasia S. Kritikou, Nikolaos S. Thomaidis “*Wide scope screening of >900 pesticides in olive oil using LC-ESI/GC-APCI-QToF-MS*”, 12<sup>th</sup> International Conference on “Instrumental Methods of Analysis” (IMA), **2021**, virtual event (poster presentation).
- Anastasia S. Kritikou, **Sofia K. Drakopoulou**, Marilena E. Dasenaki, Evangelos Gikas, Nikolaos S. Thomaidis “*Holistic untargeted LC-HRMS-based metabolomics workflow for food authenticity studies: Exploiting both RPLC- & HILIC-HRMS platforms capability for citrus juices authenticity investigation*”, 12<sup>th</sup> International Conference on “Instrumental Methods of Analysis” (IMA), **2021**, virtual event (poster presentation).
- **Sofia K. Drakopoulou**, Dimitrios E. Damalas, Nikolaos S. Thomaidis, Carsten Baessmann, “*Potential of trapped-ion-mobility UHPLC-QTOF in food authenticity studies: characterization of co-eluting secoiridoids isomers found in Greek extra virgin olive oil*”, 69<sup>th</sup> American Society for Mass Spectrometry (ASMS), **2020**, virtual event (poster presentation).
- **Sofia K. Drakopoulou**, Dimitrios E. Damalas, Carsten Baessmann, Nikolaos S. Thomaidis, “*Unraveling the Mystery Of Isomeric Compounds Crucial In Food Authenticity Studies Utilizing Trapped Ion Mobility Combined with LC-HRMS – Secoiridoids in Extra Virgin Olive Oil as a Case Study*”, 9<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2019**, Prague, Czech Republic (oral presentation).
- **Sofia K. Drakopoulou**, Dimitrios E. Damalas, Carsten Baessmann, Nikolaos S. Thomaidis, “*Potential of Trapped Ion Mobility combined with LC-HRMS in Food*

- Authenticity Studies: Identification and Characterization of Secoiridoids Isomers found in Greek Extra Virgin Olive Oil*", 9<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2019**, Prague, Czech Republic (poster presentation, **awarded**).
- Nikolaos S. Thomaidis, **Sofia K. Drakopoulou**, Anastasia S. Kritikou, Dimitrios E. Damalas, Marilena Dasenaki "Using Bruker HRMS-Techniques for the Development of Novel Methods for Food Authenticity and Fraud Investigation", 9<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2019**, Prague, Czech Republic (Bruker's vendor seminar).
  - Marilena Dasenaki, **Sofia Drakopoulou**, Reza Aalizadeh, Nikolaos Thomaidis, "Assessment of Fruit Juice Authentication Using UPLC-QTOF/MS: Mass Spectrometry-Based Metabolomics Approaches for the Detection of Pomegranate Juice Adulteration", 9<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2019**, Prague, Czech Republic (poster presentation).
  - **Sofia K. Drakopoulou**, Marilena E. Dasenaki, Reza Aalizadeh, Adamantia-Eleni G. Manola, Konstantinos N. Nikolakis, Nikolaos S. Thomaidis, "Un-Targeted Metabolomics Approach for the Characterization, Classification and Mapping of Bioactive Compounds in Greek Extra Virgin Olive Oil", 11<sup>th</sup> International Conference on Instrumental Methods of Analysis (IMA), **2019**, Ioannina, Greece (oral presentation).
  - Tzachristas, M.E. Dasenaki, K. Pasvanka, G. Koulis, **S. Drakopoulou**, R. Aalizadeh, N. S. Thomaidis and C. Proestos, "Development of a wine metabolomics approach for the varietal discrimination of selected Greek wines", 2<sup>nd</sup> Food Chemistry Conference: Shaping the Future of Food Quality, Safety, Nutrition and Health, **2019**, Seville, Spain (oral presentation).
  - Nika M.C, Damalas D., Koulis G., Alygizakis N., Nikolopoulou V., **Drakopoulou S.**, Psoma A., Kostakis M., Aalizadeh R., Oswald P., Slobodnik J. and Thomaidis N. S., "Extended Monitoring of Legacy Pollutants and Emerging Contaminants in the Marine Environment of Black Sea", 11<sup>th</sup> Aegean Analytical Chemistry Days (AACD), **2018**, Chania, Crete, Greece (poster presentation, **awarded**).
  - Marilena E. Dasenaki, **Sofia K. Drakopoulou** and Nikolaos S. Thomaidis, "Targeted and Untargeted Metabolomics as an Enhanced Tool for the Detection of Juice-to-Juice Adulteration", 8<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA), **2017**, Prague, Czech Republic, (poster presentation).

### Award and Honors

- Co-founder of the awarded innovative idea "Track4Value" in the entrepreneurship competitions of TrophyChallenge, EIT Food, OliveChallenge "ΦΙΛΑΙΟΣ", NKUA Applied Innovation "Archimedes", Acein AUEB (**2021-2023**).

- Co-owner of EU patent “A method for evaluating the authenticity of food products and a system thereof” (No: EP22201755.0).
- Graduate Teaching Assistant Scholarship / National and Kapodistrian University of Athens (**2022**).
- Awarded as most distinguished candidate in Natural Product chemistry – Women in Science / “Indena - Biagio Alberto Della Beffa” prize, ISSNP 2021 / Indena (**2021**).
- Full scholarship from Hellenic Foundation for Research and Innovation (HFRI) under the HFRI PhD Fellowship grant (Fellowship Number: 1308) (**2019-2022**).
- Best Poster Award, 9th International Symposium on Recent Advances in Food Analysis, RAFA, Prague, Czech Republic, November 5-8 (**2019**).
- Best Poster Award, 11th Aegean Analytical Chemistry Days, AACD 2018, Chania, Crete, Greece (**2018**).
- Scholarship from Nikolaos Papadimitriou Foundation for BSc studies (**2011**).

### Certificates

- Certificate of Participation "1st Python and Machine Learning Bootcamp", National Center for Scientific Research "Demokritos" (**2022**)
- Certificate of Oenologist, Chemistry Department, National and Kapodistrian University of Athens, Agricultural University of Athens (**2016**)
- Certificate of Computer Knowledge, Chemistry Department, National and Kapodistrian University of Athens (**2016**)
- Certificate of Proficiency in English, University of Michigan (**2013**)
- Certificate of French language, level B2, University of Paris IV – Sorbonne (**2009**)

### Professional Affiliations

Association of Greek Chemists, 2017-to date

Member of Trams group, 2014-Present ([trams.chem.uoa.gr](http://trams.chem.uoa.gr))

Women in Olive Oil (WIOO), 2022-Present ([womeninoliveoil.org](http://womeninoliveoil.org))

### Contact information

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