SPECTRA

TWINNING BOTTOM-UP

"TWINNING COORDINATION FOR ENHANCED SCIENTIFIC CAPACITY IN WATER QUALITY, FOOD SAFETY, AUTHENTICITY AND TRACEABILITY BY USING INNOVATIVE APPROACHES"

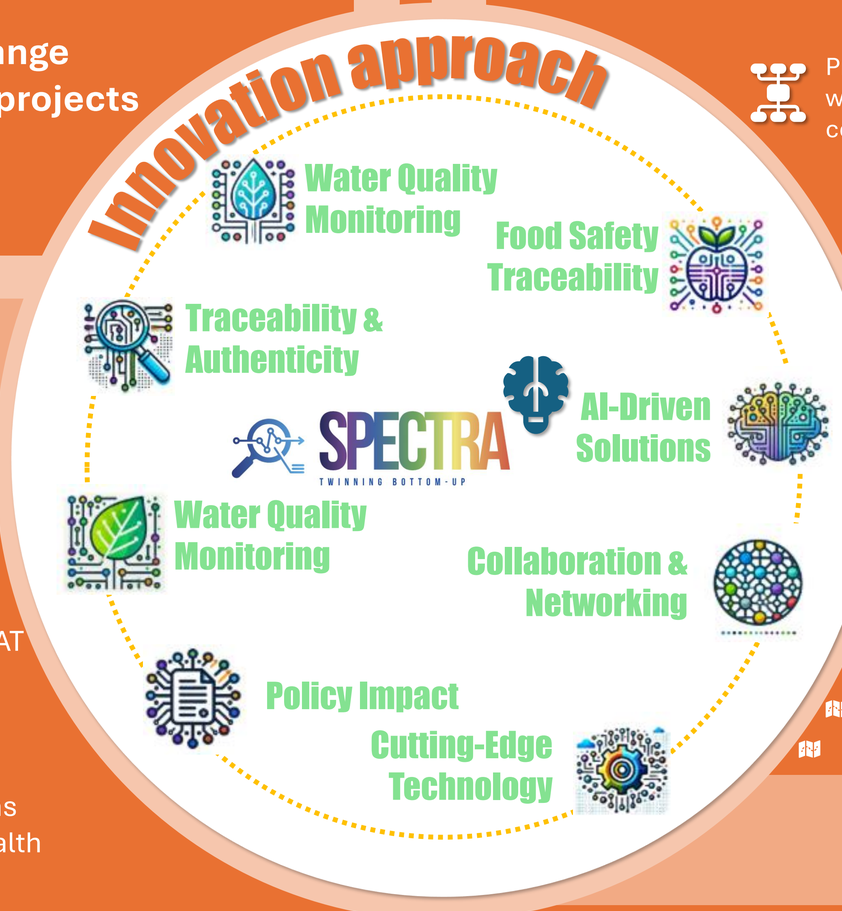
OVERVIEW

SPECTRA is a Horizon Europe Twinning project aiming to **strengthen research capacity and excellence** at the Aristotle University of Thessaloniki (AUTH) by collaborating with leading European partners in the fields of **water quality**, **food safety**, **authenticity**, and **traceability.** It fosters international cooperation, training, and knowledge exchange to face pressing environmental and food-related challenges.

SPECTRA Objectives

- **Enhance scientific skills** & **know-how** of researchers at AUTH through training and mentoring
- **Improve analytical capabilities** using **advanced MS, IRMS, & AI tools**
- **Facilitate research mobility** & **staff exchange**
- **Increase participation in EU-funded R&I projects**
- Build **long-term strategic partnerships** in **water** & **food research**

Innovation approach



SPECTRA Approach

Reinforce & enlarge collaborations

Foster meaningful engagement with academia, industry, civil society, and government bodies through communication channels, ensuring the adoption and relevance of project outcomes.

Extend activities across widening

Promote the exchange of knowledge and best practices through workshops, conferences, and publications, fostering innovation and contributing to the region's sustainability challenges.

Extend thematic focus

Boost the visibility of SPECTRA's goals and achievements across a wide spectrum, engaging researchers, policymakers, and industry experts to garner support and new collaborations.

Stimulate uptake of results

Provide evidence-based insights to policymakers to shape sustainable policies that address regional challenges, supporting systemic change & adoption of best practices.

Expected Impacts

Scientific

- ✓ Strengthened R&I capacity and EU-wide researcher network
- ✓ Support for EU/national policy and innovation in WQ&FSAT

Social

- ✓ Increased awareness & acceptance of scientific solutions
- ✓ Tools for citizens and policymakers to improve public health

Economic

- ✓ High market potential for technologies
- ✓ Improved competitiveness of EU water & food sectors

Policy

- ✓ Support for new legislation through robust data
- ✓ Input for national/EU decision-making

Roadmap

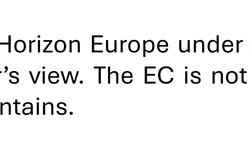
- 4 Summer Schools in Greece, Spain, Italy, Slovenia
- 4 Workshops on project management, AI, NPs, & traceability
- Hands-on training, exchanges, & stakeholder-oriented events

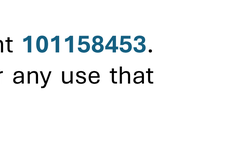
Scientific focus

SPECTRA applies **cutting-edge analytical** and **AI-based tools** to tackle real-world challenges in water quality, food safety, authenticity, and traceability (WQ&FSAT).

- **Advanced Spectrometric Techniques** (HRMS, DESI-IM-HRMS, IRMS, ICP-MS, MC-ICP-MS) are used to detect emerging contaminants (e.g., pesticides, pharmaceuticals, PFAS, & nanoplastics).
- **Spectroscopic Techniques** (FT-IR, ICP-AES, & μ-Raman): support the chemical profiling, authenticity verification, & multi-element analysis.
- **Sophisticated Analytical Workflows:** AF4-MALS-UV enables size-based separation of complex matrices (e.g., nanoplastics in water and food).
- **AI Tools & data-driven models** for screening, traceability, pattern detection, and big data interpretation.

Case studies





CONSORTIUM

- **ARISTOTLE UNIVERSITY OF THESSALONIKI** — Specialists in Monitoring of Contaminants by Advanced MS Techniques for water & food safety
- **ENEA** — Specialists in Traceability and Authenticity of Food products
- **Jožef Stefan Institute** — Specialists in Authenticity of Food Products by IRMS and AI tools
- **UAB Universitat Autònoma de Barcelona** — Specialists in Monitoring of Contaminants including Nanoplastics by Advanced spectrometry & Spectroscopy Techniques
- **SiTeS** — Specialists in Dissemination, Exploitation & Communication Activities

Funded by the European Union

The project received funding under Horizon Europe under grant agreement **101158453**. The content only reflects the author's view. The EC is not responsible for any use that may be made of the information it contains.

spectra@chem.auth.gr

www.spectra-project.eu

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