





PRESS RELEASE

# A NEW OPTICAL SENSOR CHECKS THE QUALITY AND SAFETY OF LIQUID FOODS

Funded by the European Commission, the European h-ALO project was developed by the Institute for the Study of Nanostructured Materials of the National Research Council in collaboration with Warrant Hub (Tinexta Group). The result is an innovative portable system that detects pesticides, heavy metals, and microbes in liquid foods directly at production sites.

This innovative portable system utilizes fluorescence and Surface Plasmon Resonance (SPR) to directly detect the presence of pesticides, heavy metals, and microbes in liquid foods from short supply chains such as honey, raw milk, and beer at production locations. After 42 months, the European research project "h-ALO (Photonic System for Adaptable Multiple-Analyte Monitoring of Food Quality)," has successfully concluded. The initiative originated from an idea by the Institute for the Study of Nanostructured Materials of the National Research Council of Bologna (Cnr-Ismn) and Warrant Hub (Tinexta Group), one of the leading European operators in strategic and financial consulting for innovation, digital transformation, and sustainable business development. The project was funded by the European Commission under the Horizon 2020 program with a budget of over 42 million euros.

The system created by the h-ALO researchers is simple: it can be used by non-specialized personnel, and guarantees accurate and reliable results for various types of liquid substances. It also includes technologies developed to facilitate field testing, an integrated chip for fluorescent detection, and the ability to simultaneously detect various types of pesticides.

Additionally, researchers have developed a **software platform** that manages data in the cloud, enabling targeted corrective actions to reduce food waste and improve production efficiency. The software includes a database of regulatory limits and management suggestions, offering companies tools to make decisions in compliance with laws in the event of unfavourable results, supporting operators and certification managers across the entire supply chain.

"We are proud that h-ALO has succeeded in developing an innovative system for the international food industry," said **Isella Vicini**, **Director of the European Funding Development Service Line at Warrant Hub (Tinexta Group)**. "The results obtained reflect the valuable collaboration between the scientific excellence involved in the project, the industrial partners, the quality control associations in the agri-food sector, farmers' associations, and the producers themselves. Warrant Hub played a key role in fostering the commitment of the entire value chain by carefully defining the consortium from the start and serving as the leader in scientific dissemination while supporting the Coordinator. The conclusion of the h-ALO project represents a new beginning for us: the start of new collaboration paths in order to draft further research and innovation projects, which we hope will have the same technical-scientific outcomes and societal impact as h-ALO."

"After more than three years of intense and participatory work, we are proud to announce the conclusion of the h-ALO project," said **Stefano Toffanin**, **project coordinator for Cnr-Ismn**. "The technological advancement achieved with the development of our portable biosensor for detecting harmful substances in food matrices, beverages, and liquids represents a significant step towards







greater food safety and environmental sustainability. We thank all the project partners, as well as the breeders and farmers who actively contributed in the field, for their strong commitment and dedication to successfully completing this project. Together, thanks to the scientific progress generated, we have opened new paths for the future of food production and public health protection." In addition to Warrant Hub and the National Research Council (CNR), other Italian partners of the h-ALO consortium include Confagricoltura and The Circle Società Agricola Srl, both clients of Warrant Hub, as well as the Istituto Zooprofilattico Sperimentale delle Venezie and Plasmore Srl. They are joined by Wageningen Food Safety Research and Innosieve Diagnostic, both based in the Netherlands, the Swedish Rise Research, the Fraunhofer Institute for Electronic Nano Systems in Germany, and the Polish company 7Bulls.

### Warrant Hub SpA

Since 2017, Warrant Hub has been guiding the Business Innovation division of the Tinexta Group. It is the leading Italian operator and one of the most important in Europe in strategic and financial consulting for innovation, digital transformation, and sustainable business development. Founded in 1995 in Correggio (RE) by Fiorenzo Bellelli, who continues to serve as CEO, Warrant Hub operates across Italy as well as in Belgium, Bulgaria, France, and Spain, while maintaining its headquarters in its founding city.Over the years, it has built an important network of partnerships in academia, technology, finance, and institutions. With a portfolio of over 10,000 client companies and a consolidated structure composed of around 1,000 professionals, Warrant Hub provides businesses with cross-disciplinary technical and technological expertise in the areas of concessional finance (Finance & Grants), digital innovation (Digital & Innovation), sustainability and training (Sustainability & Training), and access to new, especially international, markets (Export & Markets).

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#### **TINEXTA SpA**

Tinexta is an industrial Group that offers innovative solutions for the digital transformation and growth of companies, professionals and institutions. Listed on the Europext STAR Milan (MIC: MTAA), it is included in the European Tech Leader index as a high-growth tech company. Based in Italy and present in 12 countries from Europe to Latin America with over 2,500 employees, Tinexta is active in the strategic Digital Trust, Cyber Security and Business Innovation sectors. As at 31 December 2023, the Group reported consolidated revenues of  $\in$  395.8 million, Adjusted EBITDA of  $\in$  103.0 million and Net profit of  $\in$  69.9 million.

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#### **CNR-ISMN**

**ISMN - Institute for the Study of Nanostructured Materials** is a research institute of CNR - National Research Council recognized internationally for its multidisciplinary activities in the field of nanostructured materials and enabling technologies and processes. The institute pursues the objective of generating knowledge in the field of chemical manufacturing and materials science and technology and of enhancing the results of research through the relationship with the business world.

In a stimulating and dynamic environment, thanks to the presence of many young researchers and PhDs from various countries around the world, ISMN has a prestigious scientific production and continuously carries out industrial research programs on specific application focuses.







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