PARTNERS

CNR ISMN · plasmore · csem · ISTITUTO SUPERIORE DI SANITÀ

parmalat · Fraunhofer · VTT · Warrant Hub (TINEXTA GROUP)

WAGENINGEN UNIVERSITY & RESEARCH · nébih · QCL · MILKLINE

PROJECT DETAILS

START/END: Jan 2018 – Jun 2021
EU CONTRIBUTION: 5,479,159 €
TOPIC: ICT-30-2017 Photonics KET 2017
PROJECT COORDINATOR: CNR (Italy)

FOR MORE INFO:

STEFANO TOFFANIN | *Project Coordinator*
stoffanin@bo.ismn.cnr.it

ISELLA VICINI | *Dissemination Manager*
isella.vicini@warrantgroup.it

MARK WHATTON | *Exploitation Manager*
mark.whatton@qclscientific.com

www.moloko-project.eu

Powered by beWarrant S.L.

MOLOKO

Multiplex phOtonic sensor for pLasmonic-based Online detection of contaminants in milK

PHOTONICS 21
PHOTONICS PUBLIC PRIVATE PARTNERSHIP

MOLOKO project aims to develop a **miniaturized integrated photonic sensor**, specifically designed to be used throughout the whole milk supply chain, from production to distribution.

1. PRODUCTION   2. BULK MILK HANDLING AND LOGISTIC   3. PROCESSING   4. DISTRIBUTION
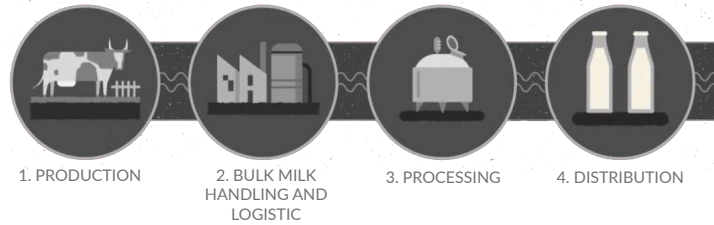
The device will enable and guarantee self-monitoring safety and compliance to quality standards through the use of highly sensitive, specific and low-cost innovative photonic technology.

MOLOKO will be able to detect multiple analytes through a multiplex strategy. The effectiveness and market focus of the engineered prototype will be quantitatively evaluated against standard analytical methods and commercially available optical biosensors.
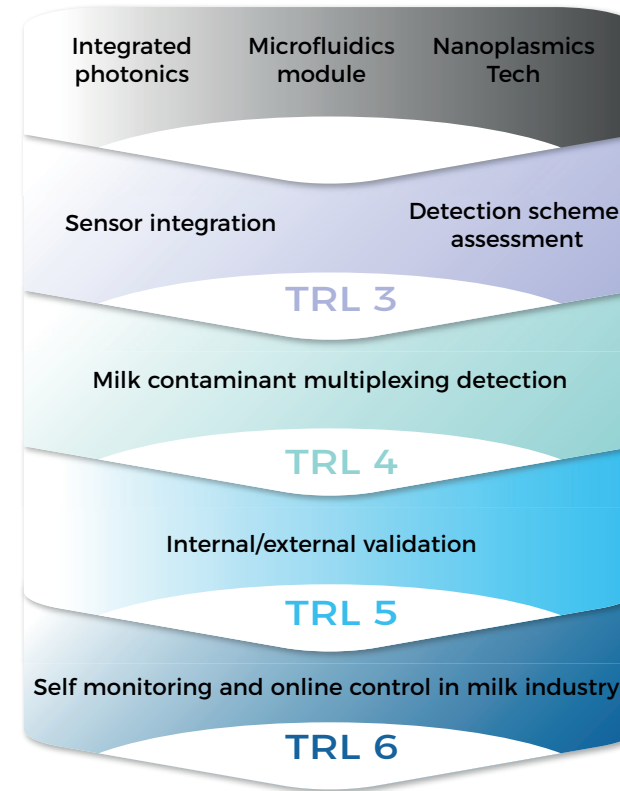
MOLOKO TECHNOLOGICAL DEVELOPMENT

COMPONENTS/ MODULES	Integrated photonics	Microfluidics module	Nanoplasmics Tech
PROTOTYPE	Sensor integration		Detection scheme assessment
		TRL 3	
TECH IN LAB	Milk contaminant multiplexing detection		
		TRL 4	
TECH VALIDATION	Internal/external validation		
		TRL 5	
TECH DEMONSTRATION	Self monitoring and online control in milk industry		
		TRL 6	

ANTIBIOTICS
Antibiotic residues can enter the milk chain from veterinary treatments. Human consumption of antibiotics through food can lead to health problems, due to the rise of antibiotic resistance in bacteria that cause disease in humans. Furthermore, antibiotics in milk can adversely affect fermentation processes, such as cheese and yogurt production.

MOLOKO aims to detect antibiotics from the beta-lactam, sulphonamide, aminoglycoside and/or tetracycline groups.

TOXINS
Toxins can enter the milk via animal feed. Animal exposure to mycotoxins through feeds is chronic and an increasing problem worldwide due to climate change. The consumption of staphylococcus enterotoxin that rapidly grows in milk is considered one of the most common forms of bacterial foodborne outbreaks worldwide.

MOLOKO aims to detect Enterotoxin A, Enterotoxin B and Aflatoxin M1.

FOOD QUALITY
Quality parameters directly affect the nutritional and organoleptic properties of finished diary products. They need to be assessed routinely to increase the process monitoring efficiency of the dairy supply chain and, in turn, competitiveness of the European food processing industry.

MOLOKO aims to detect Lactoferrin, K-casein B, beta-casein A2.