

# METROFOOD-RI

## Traceability and comparability of results in food measurements

Parma, 20-23 september 2021



Metrology, “the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology” (BIPM Bureau International des Poids et Mesures, 2017), has always played a key role in the development and validation of analytical methodologies for the realization of measurements to the highest level of accuracy and traceability to internationally recognized standards. In addition, metrology provides the tools to make measurement results reliable and comparable, being comparability based on known uncertainties which in turn are based on traceability to recognized references.

Effective food control systems are essential for implementation of the legislation concerning public health and consumer protection, considered the obligations of governments towards the World Trade Organization. The Regulation (EU) 2017/625 on official controls stipulates the need for validated scientific methods in designated official laboratories and establishes European Union and National Reference Laboratories. By combining a metrological approach with the needs identified by these laboratories, reliable information can be shared to prevent food-related emergencies caused by food contaminations or frauds.

In this context, there is a need to address specific concerns in food science in a coordinated way to reduce uncertainties and improve the reproducibility of food analyses. Besides the European Metrological Infrastructure consisting of the National Metrology Institutes and EURAMET, the EU Joint Research Centre - Directorate F, the European cooperation for Accreditation (EA) and the Standardisation Bodies (ISO, CEN), there is an urgent need to realize coordination and synergies especially for Metrology in Food and Nutrition. To this aim the European infrastructure METROFOOD-RI (ESFRI Roadmap 2018 – Domain Health and Food) aims at promoting metrology in food and nutrition by providing services, comprising an important cross-section of highly interdisciplinary and interconnected fields throughout the food value chain, including agrifood, sustainable development, food safety, quality, traceability and authenticity, environmental safety, and human health.

The Course deals with the role and application of metrology in food quality and safety, as in food fraud and authenticity. It is aimed at training personnel with specific methodological and procedural skills related to the following topics:

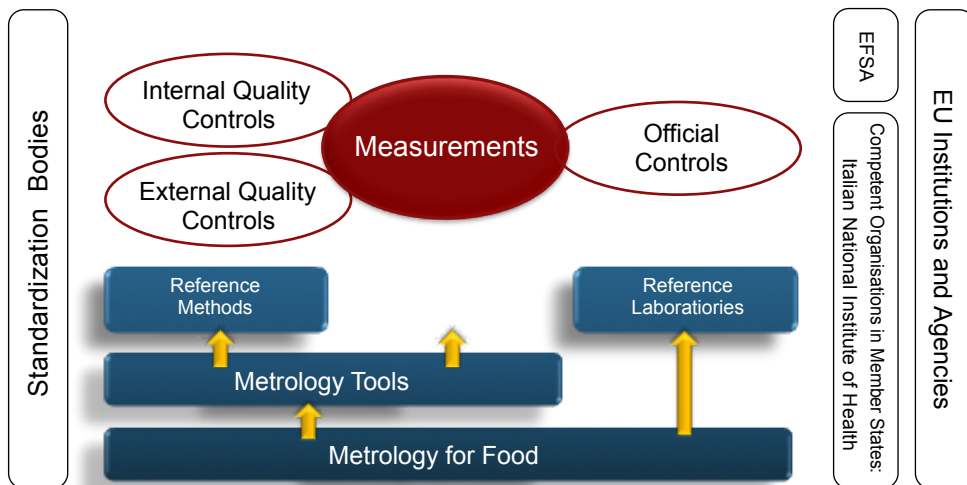
- quality assurance and metrological traceability of chemical and biological measures in assessing the quality, safety and authenticity of food
- quality control to support the reliability of the determinations for food analysis, Proficiency Testing and the role of the National Metrology Institutes
- method validation and measurement uncertainty
- reference materials and their role in food analysis to establish traceability and comparability of measurement results
- metrology and standardization of nanomaterials for the food industry and European regulations

The course is addressed to early career scientists, scientists and technicians, directors, managers and laboratory operators, quality managers, consultants, auditors of quality management systems in laboratories.

Simultaneous online and face-to-face course.

Class of 50 students (25 online students, 25 face-to-face students).

## Food Quality, Safety and Authenticity



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### Topics

#### Food Metrology

- METROFOOD-RI: a research infrastructure for metrology services in food and nutrition
- Analytical quality assurance and metrological traceability of measurement data in food safety assessment: advances in analytical systems
- Ensuring aspects of food integrity by metrology
- Improve the quality of measurement results in food analysis: the role of a National Metrology Institutes
- Establishing traceability and comparability of measurement results by Certified Reference Materials
- Method validation in food analysis

#### Assuring the quality of analytical data in food analysis

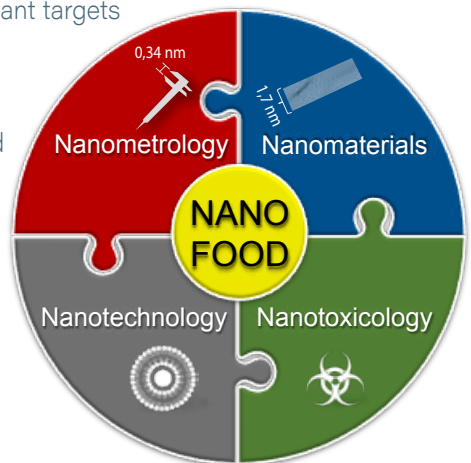
- Quality control in support of the reliability of food analysis
- Compliance with legal requirements and measurement uncertainty in food analysis
- Proficiency Testing for the food sector: the role of the European Union and National Reference Laboratories

#### Food Fraud and Authenticity

- Reference materials and calibration for stable isotope ratio analysis in food
- Stable isotope metrology in food science
- Chemometrics in food characterization and authentication
- Food industry applications and challenges in moving between targeted and non-targeted mass spectrometry methods for food fraud analysis
- Rheological tests - a tool for improving food quality used by food industry
- Collaborative studies for the identification of relevant targets for food authenticity

#### Food Quality and Safety

- EFSA's contribution to safe and sustainable food systems
- The importance of metrology and standardization of nanomaterials for food industry and regulatory authorities in Europe
- Nanomaterials in food: traceability and comparability of analytical measurements as prerequisites for food safety



## COORDINATOR

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## SCIENTIFIC COMMITTEE

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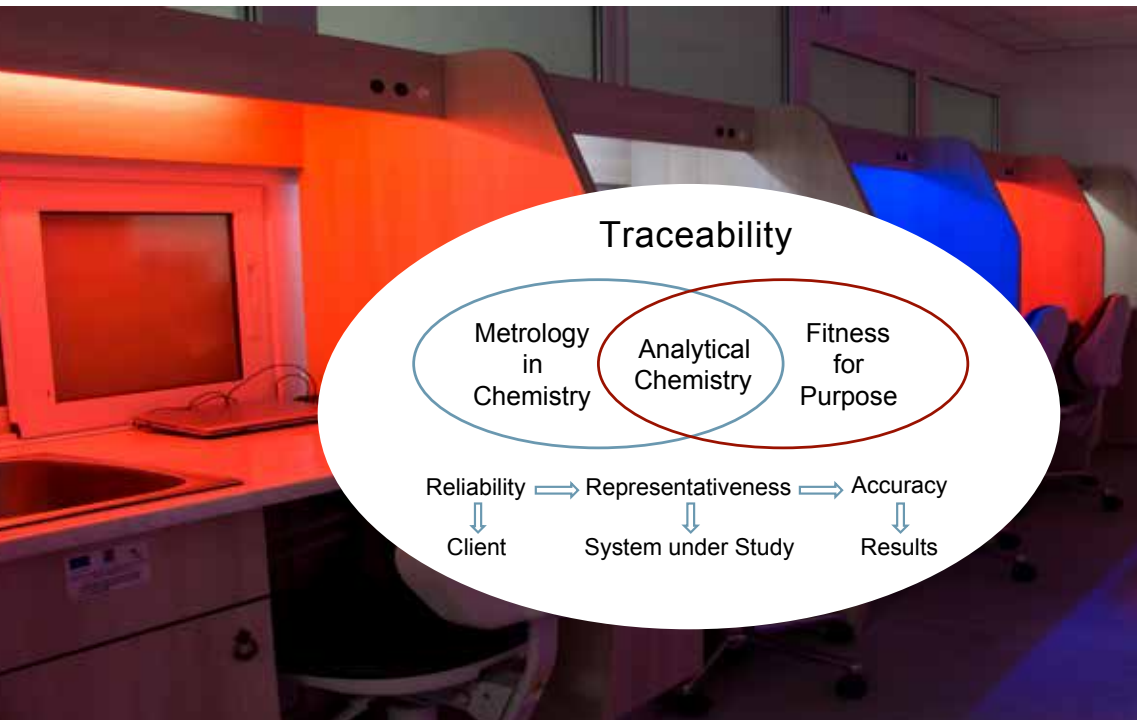
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*For administrative information:*

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*All information on methods and deadlines for enrolling in the Course:*

<http://www.advancedstudies.unipr.it/it/corsi/corsi-di-formazione/metrology-in-food-and-nutrition/194/>



### Traceability

Metrology  
in  
Chemistry

Analytical  
Chemistry

Fitness  
for  
Purpose

Reliability  $\Rightarrow$  Representativeness  $\Rightarrow$  Accuracy

↓  
Client

↓  
System under Study

↓  
Results