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WEBINAR SERIES ON

**NMR RELAXOMETRY THEORY AND APPLICATIONS**

WEDNESDAY  
**31TH MARCH 2021**  
 16.00-17.00 CET

**ROBERTO ANEDDA AND ELENA CURTI**  
 PORTO CONTE RICERCHE, SARDINIA, ITALY

**Effects of heat treatments on milk and derived dairy products. NMR relaxometry perspectives.**

## Title

Effects of heat treatments on milk and derived dairy products. NMR relaxometry perspectives.

## Abstract

NMR relaxometry applications on dairy products are presented, with particular reference to the effect of heat treatment on milk and derived products.

How NMR relaxometry parameters are sensitive to heat-driven modifications of the molecular features in milk, curds and cheeses components (protein unfolding, aggregation, casein-whey protein complexes, dimer-monomer in b-lactoglobulin, mineral equilibrium, syneresis) is discussed and the exploitation of this technique in the dairy industry is forecasted.

In light of feasible applications to quality control practices and safeguard actions for typical dairy productions, some examples of performed studies are presented to highlight the potentiality the NMR relaxometry in detecting the application of heat treatment to milk.

## Author Biography

**Roberto Anedda** is graduated in Chemistry at the University of Cagliari. He obtained his Ph.D. in Chemical Sciences and Technologies from the same University, including a period abroad at the National Research Council in Ottawa (Canada).

He is senior researcher at Porto Conte Ricerche (Science and Technology Park of Sardinia, Alghero, Italy), where he manages the NMR and Analytical Chemistry Laboratory since 2008. He developed an extended expertise in the characterization and authentication of foods by NMR metabolomics, relaxometry, imaging and benchtop applications. TD-NMR, High Field and MRI imaging equipments of the laboratory are used to investigate foods, such as dairy products and products deriving from sustainable exploitation of aquaculture, alongside with other analytical techniques (HPLC and GC).

**Elena Curti** is a graduated in Food Technology at the University of Parma, where she also obtained her Ph.D. She was a Research fellow in Food Technology for 12 years in the same University, where she conducted research on bakery and pasta products with a multi-analytical approach, including macroscopic (texture, sensory analysis), macromolecular (thermal analysis) and molecular (TD-NMR) characterization in relation to composition, processing and shelf-life implications.

She became a researcher of the NMR and Analytical Chemistry Laboratory at Porto Conte Ricerche in 2017, where she expanded her expertise to dairy products.