



Scientific project leader: prof. Stefano Materazzi  
Dept. of Chemistry  
E-mail: stefano.materazzi@uniroma1.it

# DETERMINATION OF EGG PASTA QUALITY CHARACTERIZING FACTORS

The possibility to determine quality characterizing factors in food products is always more of interest for small and medium companies. In fact, a growing attention is given to the product which shows high-quality and traceability.

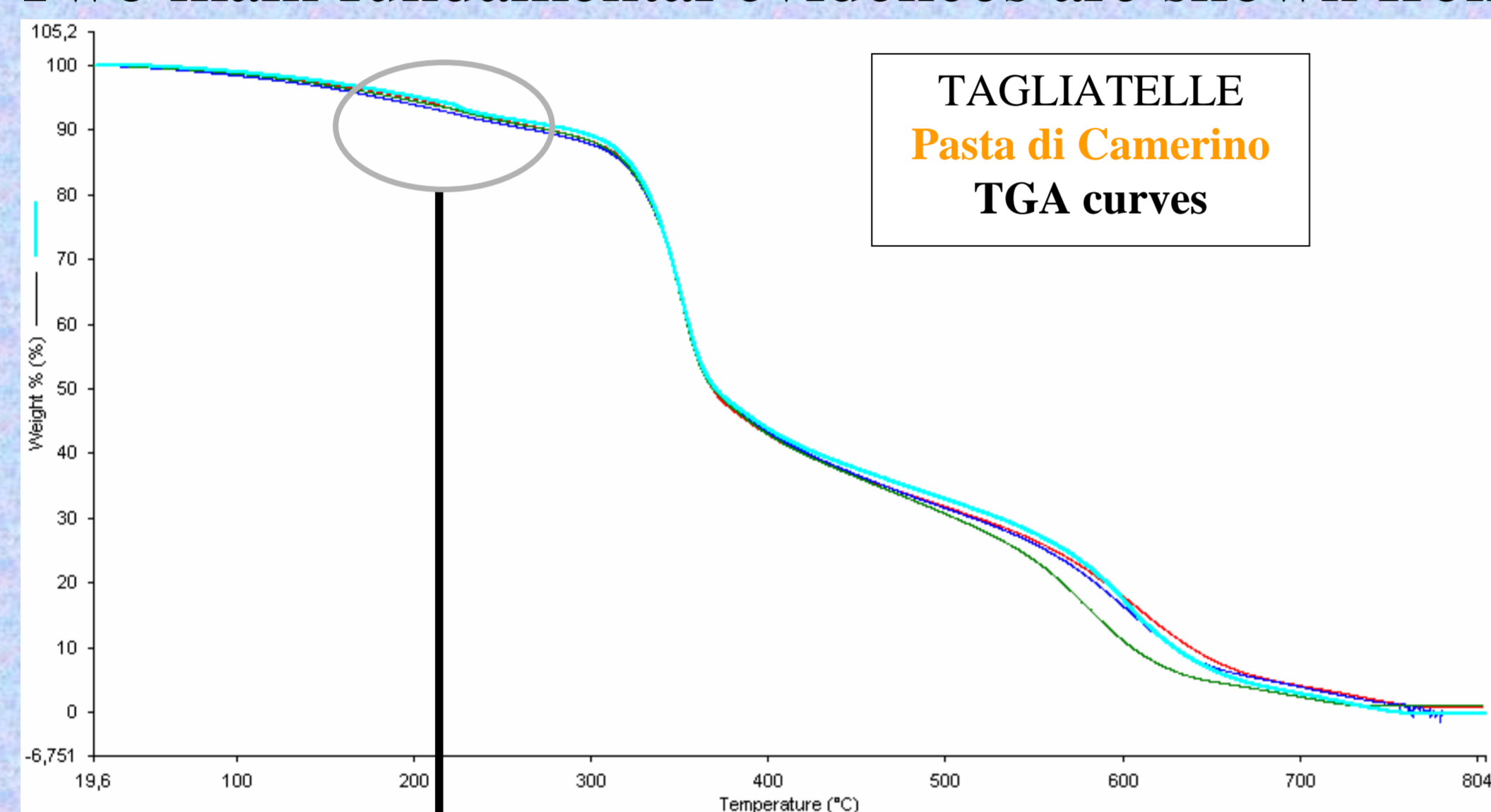
The scientific systematic study of this research project on the *Pasta di Camerino* has the goal to compare the characteristics of this low-temperature-high-quality egg pasta with other commercial egg pastas, to give experimental evidences of the parameters that enhance a quality product. The scientific work looks for "quality discriminants parameters" by means of microbiological analyses and chemical and physico-chemical characterizations.

## THERMOANALYTICAL CHARACTERIZATION

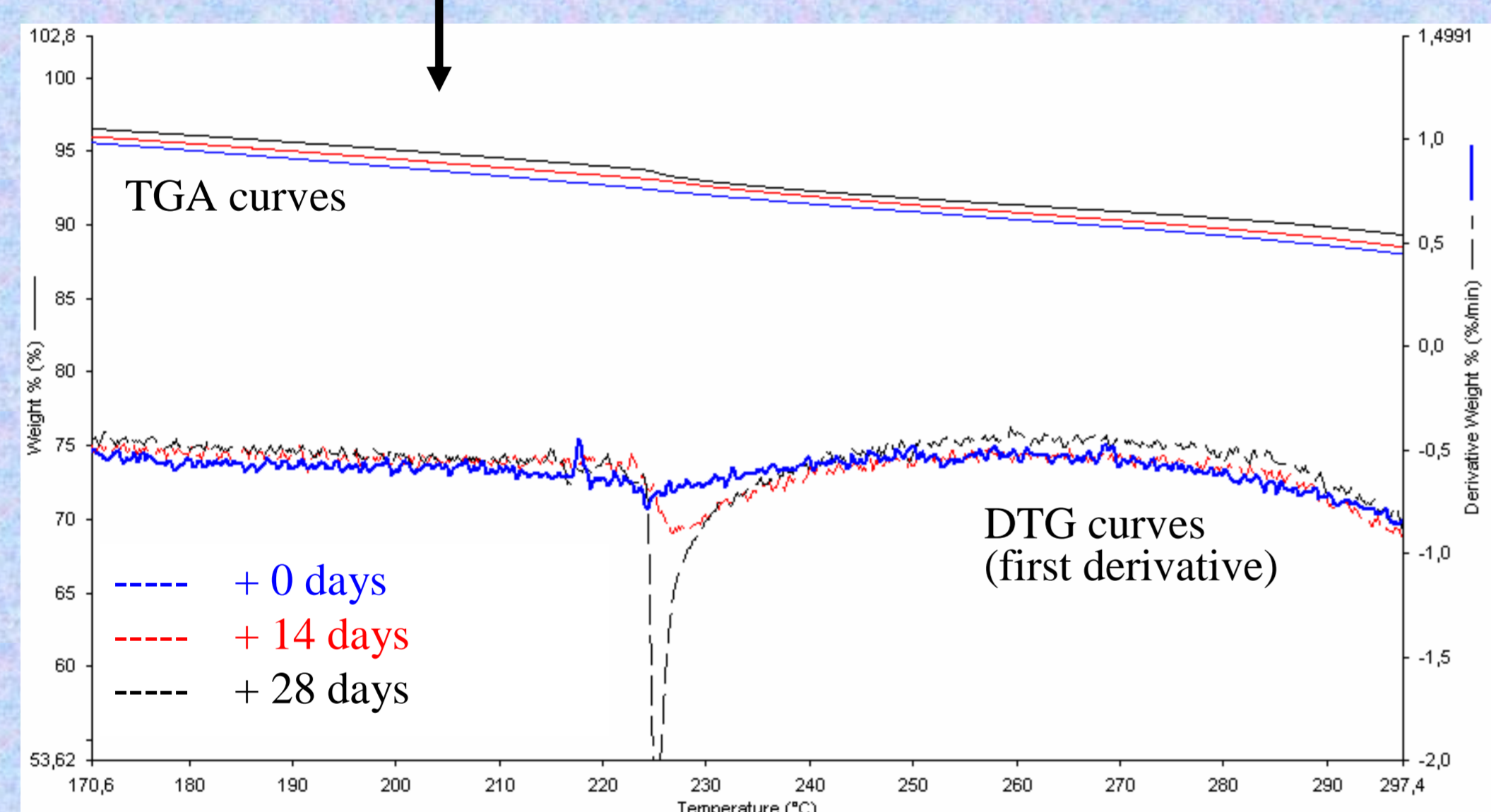
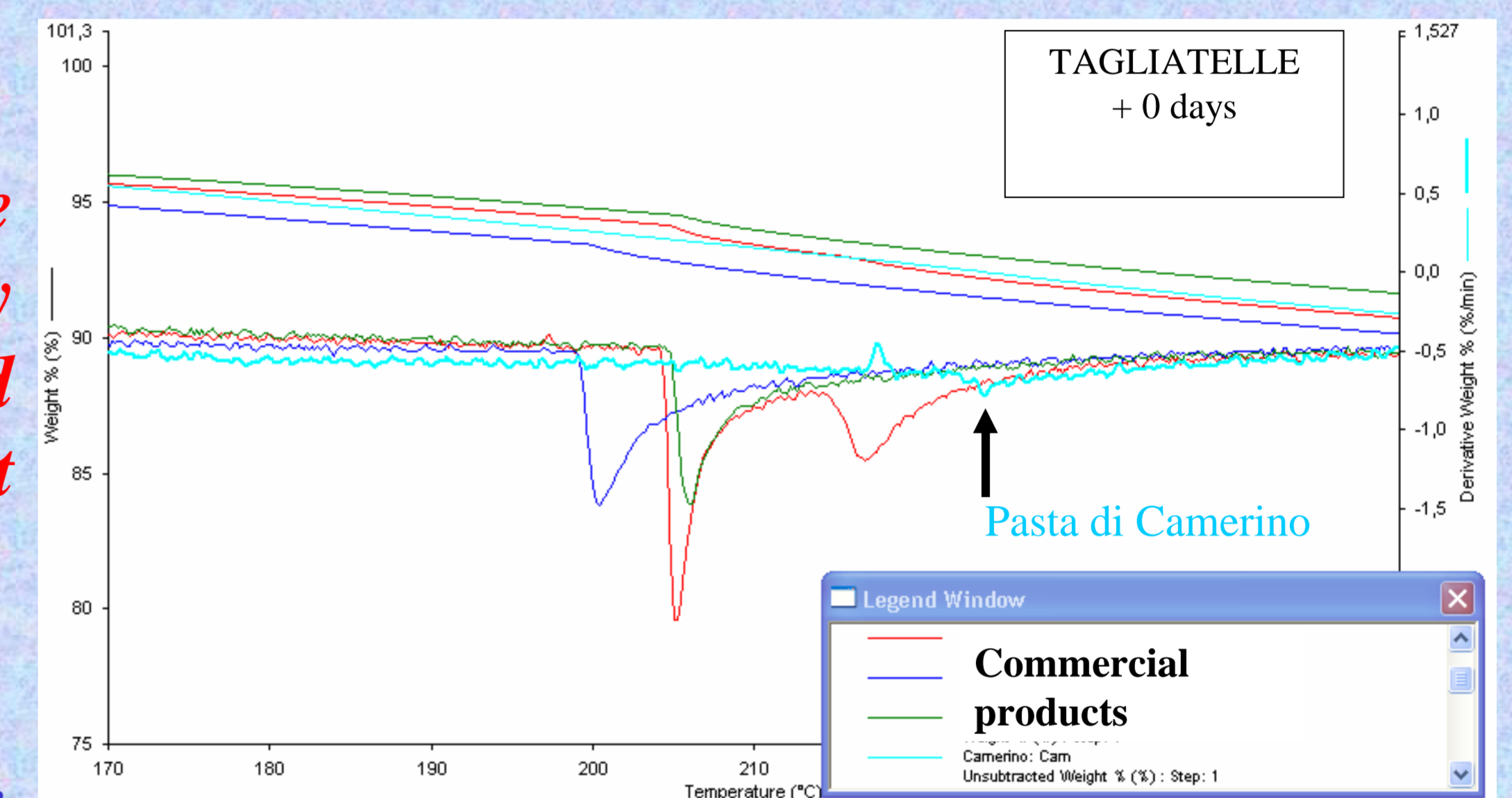
Thermal analysis is an instrumental technique that allows the evaluation of chemical and physico-chemical parameters of the examined sample without any kind of pretreatment (no extractions, purifications, derivatizations, etc.). This way, the experimental results are not affected by any modification and the data are comprehensive of the whole sample characteristic.

In the plotted examples (see figures below), the **bound water** is the driving parameter. It has been determined by a TGA and by a DTG (TGA first derivative) curves in the temperature range 150 - 250 °C. The bound water **is strictly related to the proteic matrix and to the internal structure of the egg pasta**.

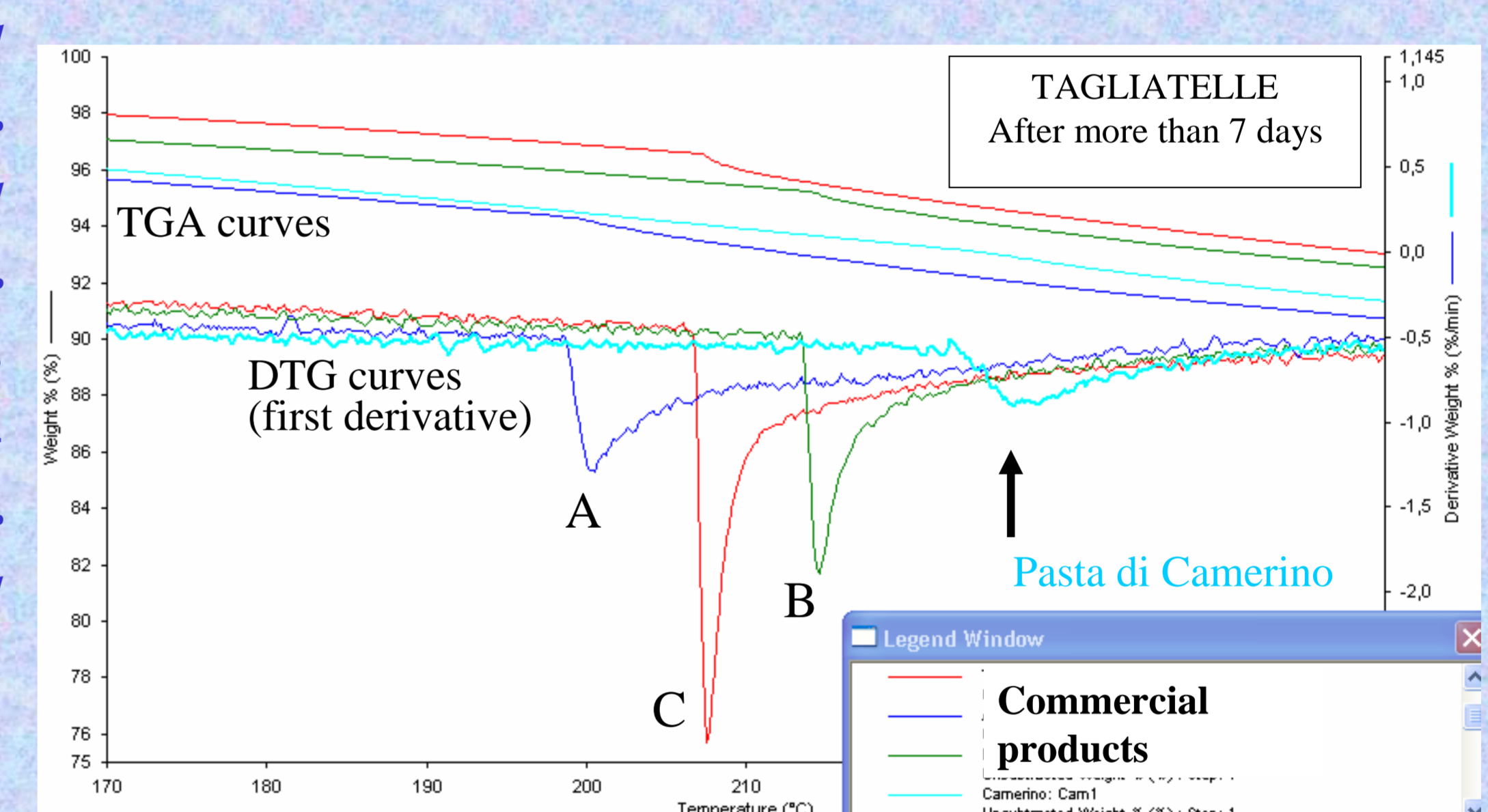
Two main fundamental evidences are shown from the *Pasta di Camerino* :



*Although the time-ageing, the bound water is not significantly modified, showing a very good egg pasta quality and the right low-temperature drying process.*



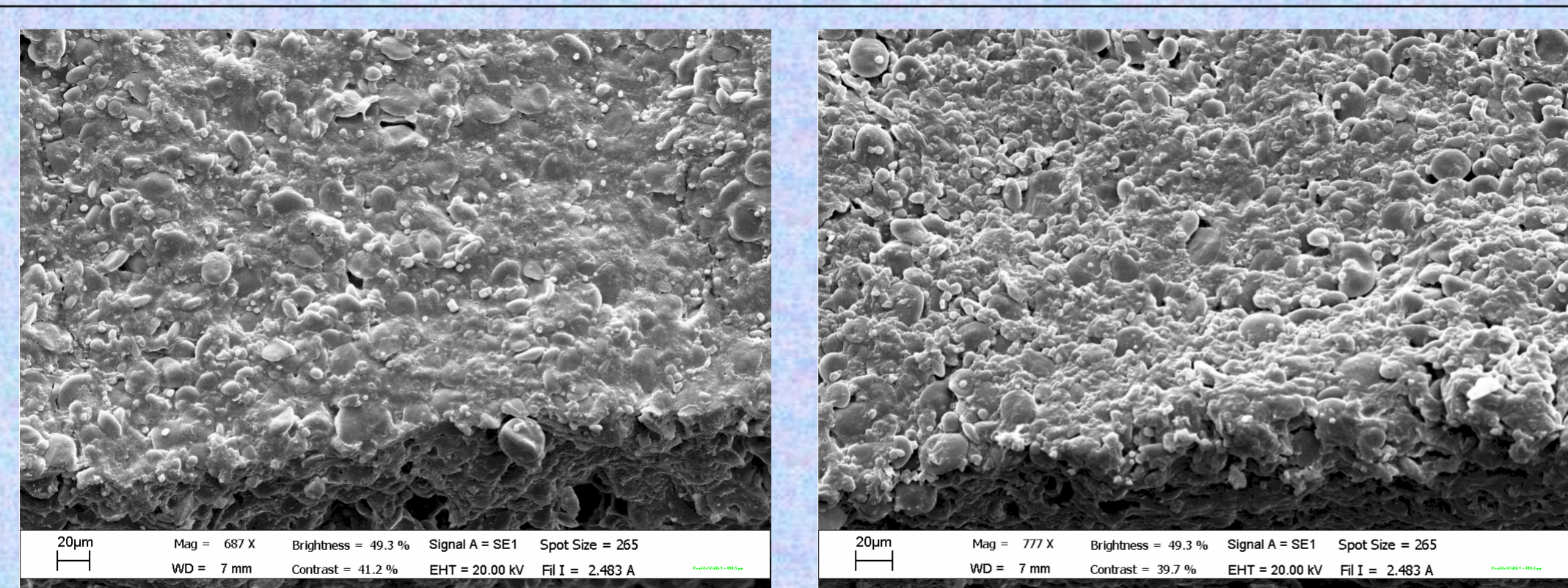
*When compared with other commercial products, the bound water is always released to higher temperature, even after several days, this showing a higher energy water-binding. The consequence is a higher cooking resistance with a better conservation of nutritional properties.*



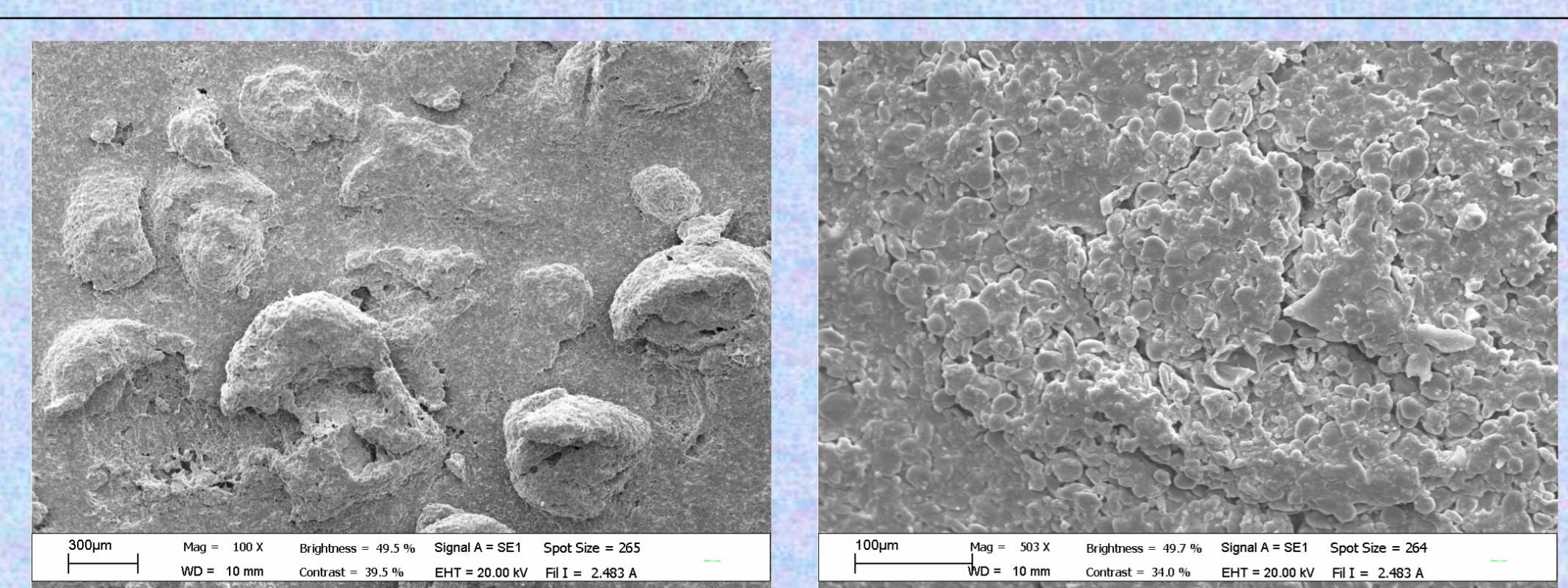
## SCANNING ELECTRON MICROSCOPY (SEM) CHARACTERIZATION

The possibility to have images for the structure and the microscopic characteristics is helpful to interpret the instrumental analytical data even for non-scientists and to get easier the comparative evaluation.

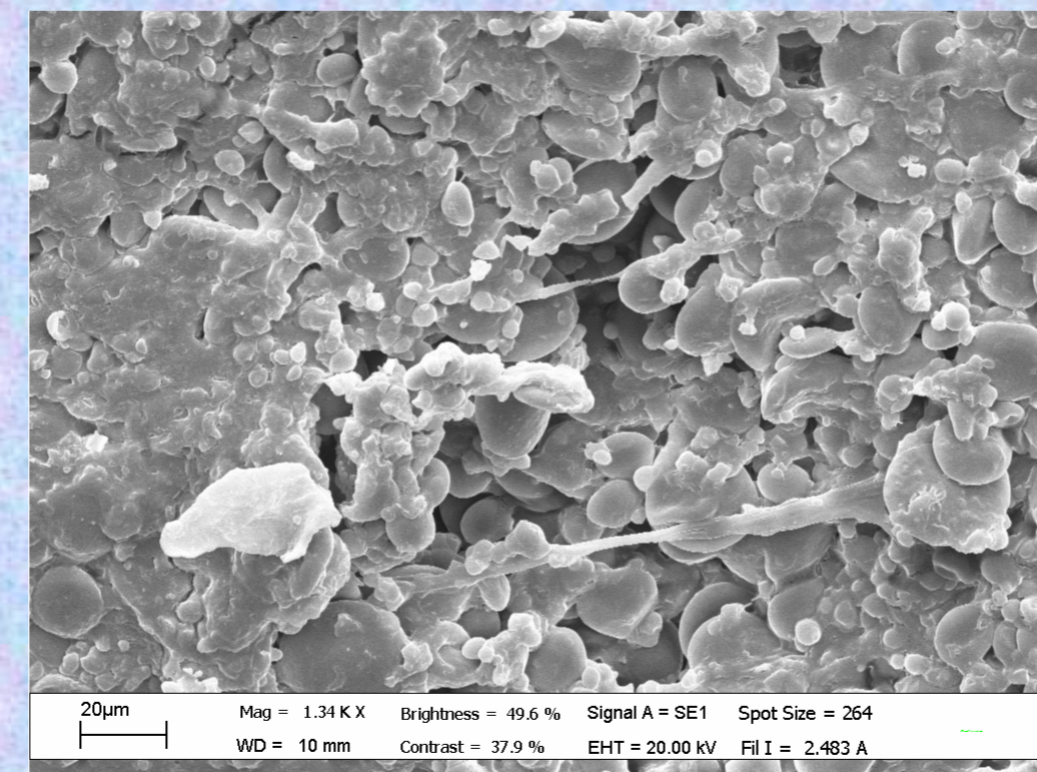
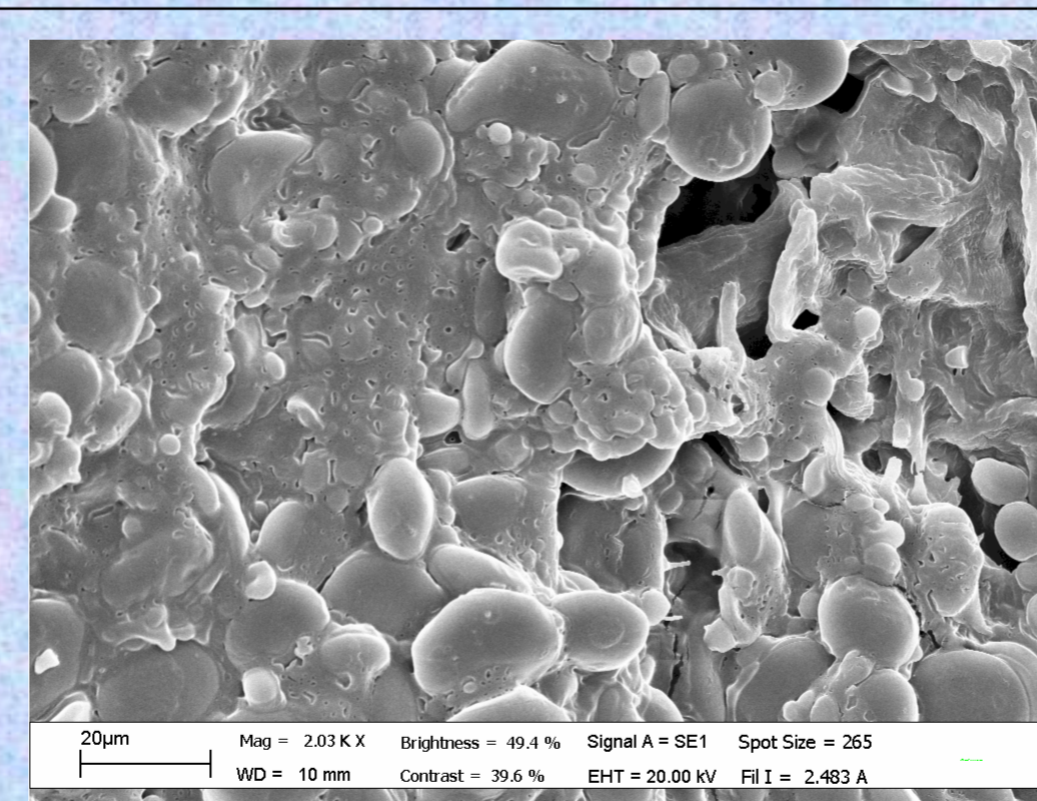
Pictures are referred to "Tagliatelle *Pasta di Camerino*" compared with one of the commercial products previously analyzed with the thermoanalytical techniques.



It is clearly shown the difference on the surface. The Pasta di Camerino (left) shows a very homogeneous surface with few brake points



Expanded view of the surface. The Pasta di Camerino (left) is not broken



Note the presence of small particles that will be lost when cooking. The Pasta di Camerino (upper) shows less particles and better shaped structure.

### Profiles

The pictures enhance the difference of the internal structure of the two samples.

The structure obtained by a higher quality starting materials and a lower drying temperature, typical of the Pasta di Camerino (upper) is clearly different.

When comparing the two samples, a larger and more homogeneous texture can be noted, with a consequent higher quality final product.

