

## NIRS APPLIED TO “PASTA FILATA” CHEESE ANALYSIS

Tiziana M.P. Cattaneo\*, Adele Maraboli, Roberto Giangiacomo

*Istituto Sperimentale Lattiero-Caseario, Via A.Lombardo, 11, 26900 Lodi – ITALY  
Phone +39 0371 45011, fax +39 0371 35579, e-mail: cattaneo.ilc@pop.telware.it*

The aim of this work was to test the feasibility of NIRS in analysing textural characteristics of "Pasta Filata" cheese during the shelf-life.

For this purpose, 128 samples of “Pasta Filata” cheese, subdivided into two sets on the basis of the wax used to avoid mechanical damages (paraffin, biodegradable wax), were analysed by using an InfraAlyzer 500 (Bran+Luebbe). Analyses were performed at room temperature. Samples were cut into small cylinders (D=3.2 cm, height = 1 cm), in agreement with literature information. Data were processed by using Sesame Software (Bran+Luebbe). Samples were analysed, during the shelf-life, at 90 and 120 days. In parallel, textural characteristics were detected carrying out a compression method by using an Universal Testing Machine Instron model 4301 (Instron Corporation, Canton, Massachusetts). As compression probe was used a cylinder (D = 5.8 cm, height = 3.7 cm) and a speed rate of 20mm/min was applied. The load at 20 mm of compression was recorded on sample cylinders of 1.7 cm (D) by 2 cm (height).

Qualitative analysis of full spectra showed the possibility to gather samples on the basis of the days of shelf-life.

The textural characteristics of cheese during the shelf-life was evaluated by comparing NIRS data with rheological results. The best correlation was obtained applying MLR to the first derivative of normalised absorbance values at seven wavelengths. Load values were plotted against the NIR prediction values based on first derivatives.

NIRS proved to be an useful tool in classifying samples on the basis of the shelf-life period as well as in predicting their textural characteristics ( $R^2 = 0.916$ , SEC = 0.192, SEP = 0.248 , SEV = 0.345).