Abstract

In management of food production and processing, multivariate data analysis and process monitoring enhance the efficiency to maintain nutritional product quality and diminish the loss due to the decaying along the supply chain of perishable agro-food products. The limitation of traditional univariate methods in process monitoring is overcome by multivariate techniques, since the latter uses the correlation among the various variables in developing the monitoring statistics and hence, enables the visualization and interpretation of the 'big picture' about the process status. Multi¬variate statistical process monitoring (SPM) techniques are based on statistical methods such as principal components analysis (PCA). In this paper, PCA based multivariate techniques are applied to SPM in the site-specific monitoring of apples using nondestructively recorded apple spectra recorded during fruit development on tree. The fruit quality changes in time are used as normal reference for the fruit development and new growing samples are monitored in order to detect any anomaly in their growth conditions.