

### **Abstract**

Braising is one of the most important causes for rejecting apples at quality inspection. The failure of recognizing the fresh bruises, which do not have signifies discoloration yet, attributes to part of the misclassification. This paper presented a method of using visible and NIR spectroscopy to detect fresh bruises by predicting the softening of apple tissue. The softening was described as an index value associated with the E-modulus. Reflectance spectra were acquired in the wavelength region between 400 and 1700 nm. Partial Least Square regression was applied to relate the reflectance spectra to the softening of the apple tissue. With the developed algorithm, a classification accuracy of more than 95% could be obtained for both of the sound and recently bruised spots on the selected cultivars apples.