

Hyperspectral reflectance imaging for detecting defects on fruits

Byoung-Kwan Cho¹, Moon S. Kim², Man-Soo Kim¹

¹ *Chungnam National University, Dept. of Bioindustrial Machinery Engr, Daejeon, Republic of Korea*

² *USDA-ARS, Food Safety Laboratory, Beltsville, MD, USA*

Corresponding author: chobk@cnu.ac.kr

Feasibility of hyperspectral reflectance imaging technique for the detection of defects underneath fruit skin was investigated. Defects exist underneath the fruit skin are not easily discernable by using conventional color imaging technique. Development of sensitive detection methods for the defects is necessary to ensure accurate quality sorting of fruits. Hyperspectral imaging techniques, which combine the features of imaging and spectroscopy to simultaneously acquire spatial and spectral information, have demonstrated good potentials for identifying and detecting spectral and spatial anomalies due to defects and contamination on biological substances. In this study, uses of a high spatial resolution hyperspectral reflectance are presented as tools for selecting multispectral VIS/NIR bands to detect defects on fruits. Several supervised classifiers are explored to select optimal wavebands and threshold values. Results demonstrated good potential of the hyperspectral reflectance imaging for detection of defects underneath the fruit skin.