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Symposium Information & BOOK of ABSTRACTS

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Optics

& *its applications*

Design and Developing of a LabVIEW-based LED-Induced Fluorescence Spectroscopy System for Non-destructive Quality Assessment of Horticultural Products

Hamed Abbasi¹, Majid Nazeri¹, Seyed Ahmad Mireei²

¹*Department of Photonics, Faculty of Physics, University of Kashan, Kashan, Iran*

²*Department of Agricultural Machinery, College of Agriculture, Isfahan University of Technology, Isfahan, Iran*

Over the past several years, the demand for high quality horticultural products has been remarkably increased. Thus, it is important to use non-destructive methods for product quality monitoring. Presently, spectral measuring methods such as fluorescence, transmission, remission and diffuse reflection have been investigated for fruit quality control applications. LED-induced fluorescence spectroscopy has proved its potential for non-destructive detection of some defects in agricultural products, such as tissue browning and bruising. Due to such defects, the changes in the polyphenol and chlorophyll contents are occurred which can be considered as visible marks of decreasing fruit quality. In the present work, a fluorescence spectrometer (spectrofluorometer) controlled by LabVIEW software is designed and developed. The spectrometer is able to measure the fluorescence spectra directly from the fruit and vegetable surface in the desired regions. To do so, the spectrometer is equipped with a suitable fiber-optic probe. The hardware solution is based on data acquisition working on the USB platform and controlled by the application running on the PC. In the next step, by applying the fluorescence spectroscopy, the changes in chlorophyll content during shelf life are determined by using spectral analysis in the visible range. In this system the chlorophyll fluorescence is induced by a light emitting diode (LED).