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Poster

## LASER SENSORS IN FOOD QUALITY CONTROL IN ANDALUCIA



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*Keywords:* Pomace oil; Laser diode; Food enrichment

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### ABSTRACT

**Motivation:** The present study has a double purpose: The creation of a new food product whose main component is pomace olive oil, and studying its properties with a laser diode device designed at university. The development of this new product is based on oil enrichment, a process that is also widespread in the food industry. The enrichment causes changes in the characteristic profile of the pomace oil. Five different vegetables were used in this experiment: Algae, carrots, Swiss chard, spinach and basil.

**Methods:** Two different techniques have been used to measure the samples in order to contrast the results obtained and make them more reliable: Fluorescence spectroscopy and UV-Visible spectrophotometry. For the first mentioned technique, a device with a fiber spectrometer and a UV laser diode was developed in the laboratory to be the basis of this and future research within the field of food and technology.

**Results:** Several emission and absorption spectra were obtained. From all the prepared pomace olive oil samples, the ones enriched with basil showed the most intense spectra, meaning that the concentration of the components (chlorophylls and carotenes) with absorption and emission in the UV region were higher than in the other samples.

**Conclusions:** The use of two different techniques has been able to demonstrate that, from the tested vegetables, the best enrichment is obtained with basil. Despite its cost compared to spinach, the organoleptic characteristics (color, smell and taste) of olive-pomace oil enriched with basil are much better. Finally, the UV laser diode/spectrometer prototype developed at the department of Chemical Engineering and Materials has proven to be effective in the analysis and control of olive oil profiles.

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