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Spectroscopy to Reach Applications for Food Quality Control and Safety

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Controlling the quality of foods and locating adulterated products is a relevant issue not only for the economy of a country but also its general health. In this sense, the equipment used to determine quality and detect fraudulent activities should be developed in a straightforward, fast, and cost-efficient fashion.

In this work, spectroscopic equipment combined with powerful nonlinear algorithms, including machine learning-based algorithms, are used for the quality control in real-time of products such as extra virgin olive oils, honey, Spanish wine, vinegar, and more. The main components of the analytical equipment are light source (LEDs and laser diodes), a cuvette and a spectrophotometer.

The main results are comparable to commonly employed approaches in the field (by regulating authorities or other research groups), which are typically more sophisticated and expensive. This opens a door to the production of economic and simple equipment to easily control the quality of foods and detect fraudulent activities like adulterations.

Biography:

Dr. Jose S. Torrecilla is a Professor of Chemical Engineering Department of the Complutense University of Madrid (UCM). He completed his Ph.D with honors in Chemical Engineering from UCM in 2000. Advanced Technician in Occupational Risk Prevention and Integrated Management Degrees were achieved in 2005. In 2017, he got his MBA degree with honors. Modeling complex systems for many fields such as health, chemistry, and food technology is his main line of research, which is done in collaborations at national and international levels. The quality of his work has resulted in the publication of his results in a high number of prestigious scientific journals.