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## **SUPERCRITICAL CO<sub>2</sub>, AN ALTERNATIVE DRYING TECHNIQUE FOR FOOD TREATMENT**

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**F**ood drying is one of the oldest processes for food preservation. Lowering the water content from foodstuff reduces enzymatic activity and microbial proliferation, thus improving food shelf life. Thermal treatment is the most widely used process for food drying; however, high temperatures induce losses of the matrix's original properties, mainly physical/chemical and sensorial. Therefore, the development of alternative drying techniques has always been one of the main objectives of the industry. The present work investigates a newly-developed technology for food drying in mild conditions using carbon dioxide at supercritical state (SC-CO<sub>2</sub>). SC-CO<sub>2</sub> extracts water from food matrixes at low temperatures, guaranteeing the preservation of both nutritional content and sensorial properties. SC-CO<sub>2</sub> can be recycled within the process with a drastic reduction of CO<sub>2</sub> consumption, hence cutting costs. Process optimization is dependent on the food matrix, as well as process parameters: temperature, pressure, CO<sub>2</sub> flowrate, and treatment time influence the final sample's weight loss and water activity. Overall, this study demonstrates that SC-CO<sub>2</sub> is a promising alternative to traditional food drying methods.

### **Biography**

Filippo Michelino is a temporary Research Assistant at the University of Padua, where he has worked since 2016. His research is focused on the study of alternative processes for food drying and pasteurization under the supervision of Prof. Sara Spilimbergo. He attended the 2016 European Summer School in High Pressure Technologies. In 2016 he earned the Master degree in Chemical and Process Engineering, with a dissertation on "In situ Raman monitoring of dense CO<sub>2</sub> drying of biological matrices". He is first author of two papers in international peer reviewed journals.

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