

## **Ultrasound in wet biological materials subjected to drying**

*Stefan Jan Kowalski*

*Poznań University of Technology, Institute of Technology and Chemical Engineering*

*Poland*

### **Abstract**

The aim of this article is to present the effect of external action of air-borne ultrasound (US) upon biological wet materials subjected to drying. The study allows to determine the drying effectiveness of such products like fruits and vegetables by convective drying with ultrasound enhancement. The vibration and heating effects induced by power ultrasound are considered.

The mathematical model of drying is developed and validated experimentally using the data obtained from the experimental tests carried out on the hybrid dryer equipped with ultrasonic generator. The obtained results prove that the vibration effect induced by ultrasound has a great impact on the acceleration of mass transfer without significant elevation of product temperature, and thus on the drying efficiency with respect to energy utilization and the quality of dried products like fruits and vegetables.