

EFCE Spotlight Talks

Working Party on Drying

21 May

09:30 • 12:30
CET

Drying research: focus on freeze-drying, lyophilization, spray-drying and product quality

Drying is an essential physical unit operation that can be found in a lot of production processes within the chemical, pharmaceutical, and food sectors among others. It is usually considered that about 10 to 15% of the industrial energy consumption is due to drying operation. Besides being an energy intensive operation, drying can be crucial in terms of final product quality. This is why drying research remains an important field, with development related to the design of new or more efficient dryers, the better understanding of the relation between drying operating conditions and product quality, the reduction of the environmental impact, ... based on both experimental and modeling approaches.

The aim of this webinar is to highlight some of the research done in the drying field by PhD students within EFCE members.



PROGRAM

09:30 **Welcome and introduction**

Angélique Leonard, Chair of WP Drying

09:40 **Session 1 - Freeze drying and lyophilization - Modeling**

- Mathematical modelling of heat and mass transfer during freeze-drying using high-throughput vial systems to accelerate the development of new vaccines

Juan Buceta-Correa-De-Borba (Université Paris-Saclay-INRAE-AgroParisTech)

- NIR and IR as monitoring tools for freeze-drying processes

Maite Harguindeguy and Serena Bobba (Politecnico Torino)

- Pore network generation and parameterization based on image data and experiments of freeze-drying

Nicole Vorhauer and Maximilian Thomik (Mädgeburg University)

- Modernizing manufacturing of parenteral products: from batch to continuous lyophilization

Merve Adali and Lorenzo Stratta (Politecnico Torino)

- The role of liquid films in drying capillary porous media investigated by 3D pore network models

Hafiz Tariq Mahmood (Mädgeburg University)

- Discussion

11:00 **Session 2 - Quality aspects and monitoring in food drying**

- Encapsulation of aroma compounds by spray drying of concentrated asparagus juice

Joanne Siccama (Wageningen University)

- Use of image analysis to evaluate oil-in-water emulsions stabilized with an artichoke by-product before and after spray drying

Mónica Umaña (University of the Balearic, Spain)

- Impact of pulsed electric field pretreatment and ultrasound application in drying kinetics and antioxidant properties of kiwifruit (*Actinidia deliciosa*)

Beatriz Llavata (Universitat Politècnica de València)

- Analysis of solar air heaters for drying applications

Gedion Habtay (Hungarian University of Agricultural and Life Science, Godollo)

- Use of air-coupled ultrasound for the real-time and non-invasive process monitoring. Application to potato air drying

Virginia Sanchez-Jimenez (Universitat Politècnica de València)

- Discussion

12:20 **Conclusion**

Registration and Payment

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