

TWICE™ – Freeze concentration of liquid foods for high-grade concentrates

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Abstract

The global liquid food industry is expected to reach an estimated USD 1.9 trillion by 2021 [1]. Growing urbanization and disposable income are the major drivers for the growth of this market. Urban lifestyle and higher disposable income have led to a growing interest in sports and a healthier way of eating and drinking [2]. Indeed, consumers are paying more attention to nutrition and its impact on their health and environment. This results in strong market demand for premium quality, fortifying products and healthy liquid foods [3, 4, 5].

Liquid food production results in the composition of several ingredients and water. For production purposes, natural ingredients are often concentrated and used to produce final products. The concentration of liquid foods is also a common process to reduce the volume of water for storage, transport and shelf life purposes. However, these concentrates have certain limits and suffer from negative opinion. Indeed, thermal concentration processes degrade the natural qualities of ingredients. Therefore, liquid food producers have a double challenge to address. On the one hand, they wish to reach higher concentration levels. On the other hand, they want to preserve the nutritional and organoleptic properties of the ingredients to meet consumers' expectations.

This webinar will present TWICE™, a new process developed to produce high liquid food concentrates with top-grade organoleptic and nutritional properties. TWICE™ combines two crystallization technologies, namely, suspension freeze concentration and static layer crystallization. Freeze concentration is a proven technology to concentrate liquid foods gently. Layer crystallization is mainly used for non-aqueous liquids. The combination of these two technologies is a significant step forward for the liquid food industry. It offers food companies an innovative solution to develop new products and appeal to the premium market.



Biography:

Claudia Pudack is Manager Customer Solutions and joined Sulzer in 2013. Based in Winterthur, she frequently travels to the test centre near Basel to coordinate the crystallisation tests. Dr. Pudack has 10 years of experience in changing positions within the industrial R&D environment. She received a diploma in Geology from the Freiberg University of Mining and Technology (Germany) and holds a PhD in geochemistry from the ETH Zürich (Switzerland).

Severine Dette, a dynamic chemical engineer with specialization in melt crystallization and freeze concentration of liquid foods, has been involved in the development of process solutions from lab to industrial scale. She has been a regular participant in various crystallization conferences all over the globe. Dr. Dette has completed her PhD under the supervision of Prof. Joachim Ulrich at the Martin Luther University, Halle-Wittenberg (Germany).

Speaker Publications:

1. "Freeze Concentration of Black Currant Juice", CET / 2010 / 33(5) / pp762-766, Dette, S. S., Jansen, H.
2. "Freeze Concentration of Coffee Extract", Tea & Coffee Trade Journal / 2011 / pp 32-35, Dette, S.S.
3. "Freeze Concentration of High Liquid Food Concentrates", ISIC 20 / 2017 / Dublin, Ireland, Zeuner, M., Dette, S.S.
4. "Apparatus, use of the apparatus and process for desalination of water". Patent No.: EP2861535B1, / 2018 /, Dette, S.S., Ahmad, M., Stepanski, M.
5. "Freeze Concentration liquid foods", 14th International Workshop on Industrial Crystallization WFCFD Mumbai / 2020 / (presentation), Dette, S.S.
6. "Freeze concentration for juice preparation", Sulzer Technical Review / 2017 / Issue 2 / pp. 9-12

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