

Summer Research Program 2011/2012

Project Title: Surfactants Applications in Food Materials

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Objectives

This project aims to examine the applicability of several surfactants to be incorporated in food materials for improving the product quality after drying.

- 1. Investigate the differences in the material migration behaviour of surfactants with varied charge groups during drying.*
- 2. Establish the theoretical mechanism for the effects of surfactant on food materials during the transition between ordered and disordered states.*

Description

Surfactants are a group of amphiphilic organic compounds containing both hydrophobic and hydrophilic groups. This amphiphilicity makes surfactants of many intriguing properties, which have been used in various practical applications such as detergents, emulsions, cosmetics, adhesives. Liquid surfactant systems have ordered and disordered states based on the molecular arrangement, and different charges on the hydrophilic heads will affect the behaviour of the surfactants. While drying is one of the most common product manufacturing approach in food and pharmaceutical industries, the behaviour of surfactants during drying, their interactions with the product material, and the mechanisms underlying these behaviours will be uppermost valuable for industries to optimize the manufacturing process and improve the product quality.

The study will use the single droplet drying approach combined with in situ analysis of particle evolution to determine the material migration and interaction of surfactants as drying progresses.

Requirements

The ability to handle small (0.5 – 1 mm) droplets / particles is required for this project. A strong chemistry background is desired.