

Capitalizing the condensation of superheated steam for powder crystallization control

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A unique feature of superheated steam is that it condenses upon contact with food droplets or solids. The condensation, in addition to increasing the moisture content food material, rapidly increases the temperature of the food material to the saturation temperature of the steam. High temperature and moisture is excellent for inducing crystallization in certain food material. In this talk, we will examine how superheated steam can be used as a unique drying medium for controlling the in-situ crystallization of powder in spray dryers. We will also discuss on some of the learnings from the lab, when implementing superheated steam in spray dryers. Moving on from spray dryers, we will examine how superheated steam can be used to temper amorphous food powder as a means to control and induce crystallinity in the powder. We will discuss in detail on the strategy to control a superheated steam food powder tempering process.