

Summer Research Program 2011/2012

Project Title: Scaling up of ethanol-vapour controlled crystallization of lactose particles

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Objectives

This project aims to scale up a novel technique in using anti-solvent vapour to induce crystallization to pharmaceutical excipients

- 1. Experimentally assess the strategy in using the novel anti-solvent vapour spray drying technique in large pilot scale spray dryers.*
- 2. Assess the potential of the technique in micro-encapsulating drug or bio-based material with pharmaceutical excipients (lactose).*

Description

Lactose particle is a widely used pharmaceutical excipient. One aspect which controls the functionality or usage of the lactose particles is the degree of crystallinity within the particle. Conventional method used in producing lactose with controlled crystallinity is to use pan crystallizer. There has been attempts to control the crystallinity of lactose particles in spray dryers by manipulating the operating parameters with limited success. However, recent fundamental work convectively drying suspended lactose droplets with ethanol vapour has shown that such a method can be used to control the crystallinity of the lactose. In fact, very unique morphology was obtained. These preliminary results are shown in the figure below. This project will aim to translate and to identify the strategy required to implement this technique into a pilot scale. Successful implementation of this approach will bridge the gap for actual large scale industrial applications.

