Conference abstract PMS36

Numerical Simulation of Film Formation in Tablet Coating

G. TOSCHKOFF [1], D. SUZZI [1], F. REITER [3], W. TRITTHART [3], M. SCHLINGMANN [3], J. G. KHINAST [1,2]

[1] Research Center Pharmaceutical Engineering, Graz, Austria
[2] Institute for Process Engineering, Graz University of Technology, Graz, Austria,
[3] G.L. Pharma GmbH, Lannach, Austria

E-mail: gregor.toschkoff@rcpe.at (G. Toschkoff), khinast@tugraz.at (J. G. Khinast)

Sci Pharm. 2010; 78: 663 doi:10.3797/scipharm.cespt.8.PMS36

The application of a coating layer on a tablet is a commonly used technique to selectively control tablet characteristics. Among the most important functions of the coating is the regulation of the release of active ingredient.
In the course of a typical coating process, the tablet passes a spray zone multiple times. Each time, a partial coating layer is applied. For each tablet, this is repeated numerous times until a film of desired thickness is achieved. The number of repetitions needed as well as the quality of the final coating depends strongly on the quality of the partial coating. Therefore, it is of great interest to study the outcome of a single coating event in detail.

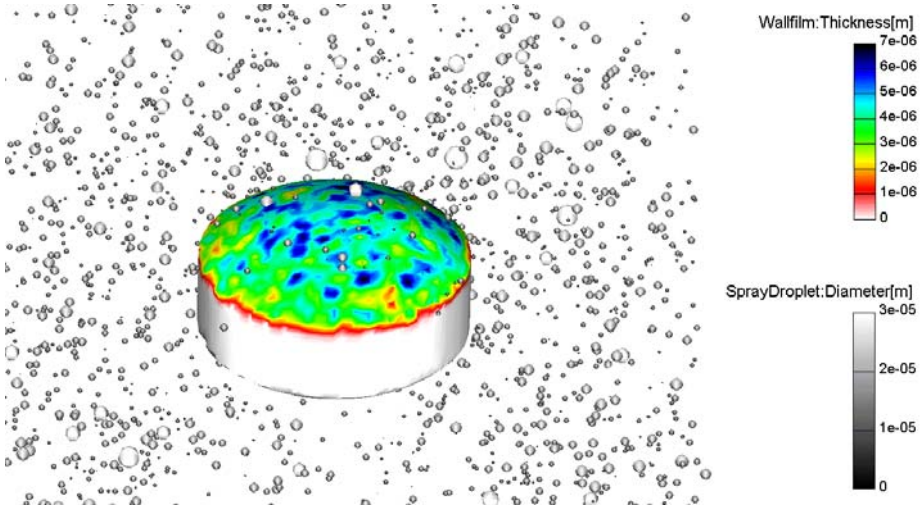

Fig. 1. Film formation on a single vertical tablet after 0.3 s in the spray zone.

In this work, we show the application of numerical simulations to the investigation of film formation on a tablet (see fig. 1). External parameters entering the simulation were taken from measurements of an industrial coating process. Adapted computational fluid dynamics (CFD) models are applied to study the influence of central process characteristics (e. g. temperature, residence time, tablet rotation or droplet diameter distribution) on the quality of partial coating. As a result, a deeper understanding on the influence of each parameter is gained, helping to optimize the tablet coating process.