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# Systematic process optimisation of fluid bed coating

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## Abstract

A design of experiments approach was used to investigate the impact of bed temperature, volumetric air flow rate, spray rate and concentration of the coating solution on fluidised bed coating of particles. The process was analysed in terms of agglomeration tendency, efficiency and coating quality. Response surfaces were fitted to the experimental data from which optimal factor combinations were calculated in order to improve the coating quality. The coating quality was assessed by a previously developed method based on a dissolution test to efficiently measure the thickness, the uniformity and the completeness of the coating. It was demonstrated that the method provides a reliable way to assess the various measures for coating quality.

*Keywords:* fluidised bed coating, design of experiments, coating quality, optimisation

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## 1. Introduction

Process optimisation is usually done using the rules of experimental design. These allow the systematic study of main and interaction effects of several factors, i.e. process settings or raw materials. The downside is the large number of trial runs, usually around 16 to 32 in full-factorial designs, which also have to be analysed in terms of the product quality.

In the case of fluid bed coating, this raises the issue of the measurement of

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