High Throughput Polymorph Screening: Just the First Step for Integrated Crystal Engineering

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Polymorphism is the ability of a compound to crystallize in more than one distinct crystal structure. The probability that a particular drug substance can exist in different solid forms is high. These modifications or polymorphs have different physical and chemical properties. From the pharmaceutical point of view, bioavailability, processability and stability are influenced by the existence of polymorphs. In order to avoid undesired changes during the production process or during the product lifetime, it is of the utmost importance to identify and control the polymorphic behavior of any drug. For good overall results, it is important to have an integral approach to these issues going from a systematic polymorphism screening to a controlled scale-up of the crystallization process.

Solvias has developed a highly efficient and time-saving tool to characterize the solid state properties of drug substances. This high throughput screening (HTS) is based on a selected number of crystallization methods which have been chosen for their potential to produce new polymorphs. For screening purposes, Raman microscopy is the analytical tool of choice to discriminate between polymorphs.
The application of the high throughput polymorph screening will be described in this work using the example of Carbamazepine.