

## **POLYMORPHS in PDF-4/ORGANICS 2010**

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The impact of polymorphs in the pharmaceutical sciences cannot be over-emphasized. It affects the solubility and, consequently the bioavailability of pharmaceutical substances. The chemical and physical property differences between polymorphic compounds (properties such as hydrogen bonding and melting point), arise from molecular packing arrangement differences that are sometimes subtle, or sometimes quite evident. The synthesis of specific crystalline polymorphs is both an art and science. Specific solvent polarity, temperature, pressure, crystallization rate, and other chemical and physical conditions are required to produce a desired polymorph. It is the delicate balance between the opposing kinetic and thermodynamic forces which dictates the successful formation of a pure polymorph. Once produced, exhaustive experiments are often conducted to ensure the polymorphic purity for a compound with multiple polymorphs.

The large number of polymorphs in the PDF-4/Organics 2010 provides an excellent reference source for polymorphic identification. It also provides good data mining opportunity for pharmaceutical polymorphs. Here, not only common pharmaceutical polymorphs from the PDF-4/Organics 2010 will be described, but also two specific polymorphic compounds will be discussed in detail.