

## **Use of combined thermal and calorimetric methods for characterization of drug substance salts. Case studies.**

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For drug substances able to form salts, the salification may change considerably the solid state properties of a drug candidate. Comparison of the solid state properties of different salt candidates may be quite complicated when the salt forms exist as different solid phases: polymorphs, solvates or amorphous forms and when different salt forms appear.

The parameters temperature, pressure, humidity, solvents can have windows for several stable forms. Therefore the solid state properties have to be studied in the context of thermodynamic and kinetic viewpoints. Several methods are necessary to characterize properly salt forms, to isolate and identify all phases to be considered and to determine thermodynamic relationships. Some case studies will show the information delivered by DSC, microcalorimetry, DVS and combined techniques such as TG-MS, IR heating cell, X-ray by heating, cooling to characterize salts and to identify complex transformations.