

POLYMORPH SCREENING: A COMPARISON BETWEEN XRPD AND COMPLEMENTARY TECHNIQUES SUCH AS SOLID STATE NMR, RAMAN AND DSC.

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Polymorphism of pharmaceutical compounds is a well known phenomenon within the pharmaceutical industry. It is mostly addressed by performing a so called polymorph screening and by choosing one of the polymorphs, often the one having the lowest free energy, for further development. Such screenings are mainly performed by a large number of crystallizations from various solvents and by using different crystallization techniques. The obtained crystals are then analyzed by one or a combination of analytical techniques such as XRPD, IR, Raman, solid state NMR, optical microscopy, DSC and TG-DTA. To be able to characterize every different polymorph the combination of techniques is crucial; however, the choice of techniques is not always based upon sound scientific arguments .

From the results of many polymorphism screening studies, the advantages, disadvantages and complementary aspects of those techniques have been obtained. This paper presents the comparison of the data obtained with XRPD relative to solid state-NMR, IR, Raman and DSC. Guidance for choosing which technique is best used for a specific study will be given.