Solid form screening of pharmaceutical compounds enhanced by Electron Diffraction experiments

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Polymorphism study of APIs is essential for selecting the most adequate solid form for development into a drug product. Therefore, it is always recommended to conduct a thorough search to establish the landscape of the crystalline solid forms and to assess the associated development risks.

For each polymorph of an API, the arrangement of the molecules in the crystal determines its physical properties and therefore, knowledge of crystal structure is important in order to fully understand and optimize the pharmaceutical performance of the drug. Consequently, an effective approach for solid form screening combined with crystal structure determination is of considerable importance across the drug development process. However, as growth of suitable crystals for X-ray crystallography may be time consuming for complex molecules, using Electron diffraction (ED) on nano-sized crystals represents a significant advantage to the solid-state studies.

This contribution aims to offer an occasion of describing the solid form screening approach including the X-ray and Electron diffraction tools for crystal structure determination. Particularly, the capability of the new ELDICO ED-1 to efficiently provide crystal structures will be explored in the case of pharmaceutical nanocrystals.

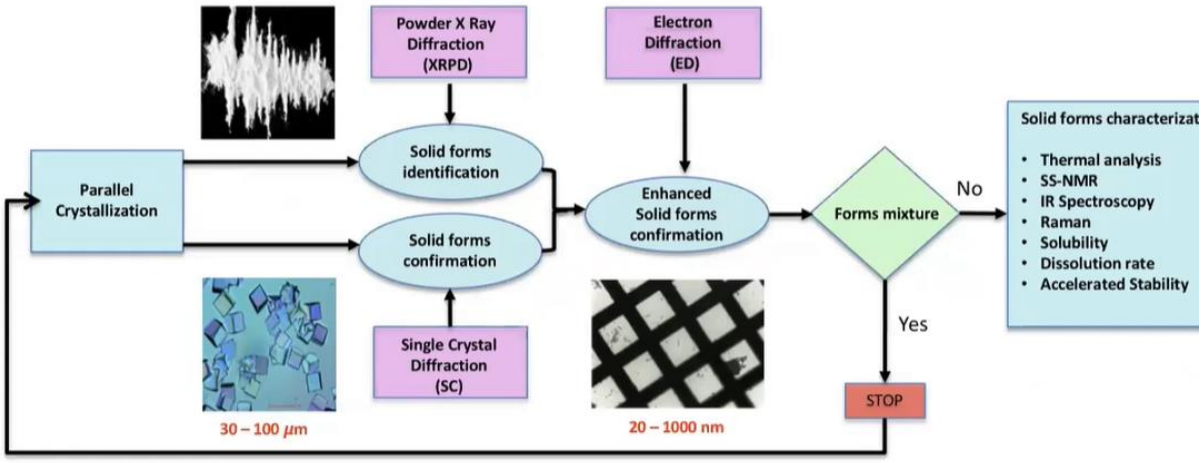

Fig. 1 Enhanced characterization workflow