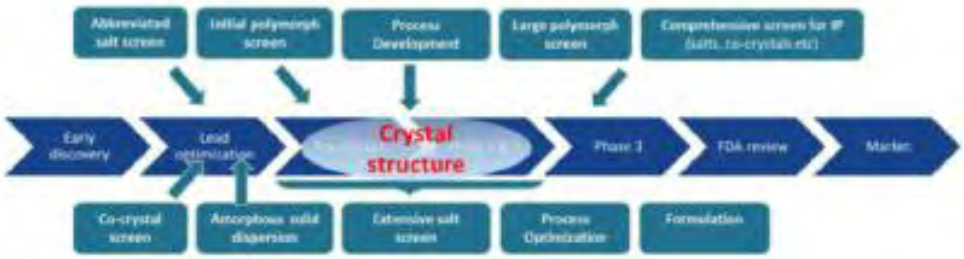
MS28-1-6 Solid-form characterization of pharmaceutical compounds enhanced by electron diffraction experiments
#MS28-1-6

D. Stam [1], J. Merkelbach [1], C. Jandl [1], G. Steinfeld [1], E. Hovestreydt [1]
[1]ELDICO Scientific AG - Villingen (Switzerland)

Abstract
Solid state screening of Active Pharmaceutical Ingredients (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 solid-state form 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 (Figure 1). 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 different case studies of the importance of crystal structure determination for the pharmaceutical industry. Particularly, the capability of the new ELDICO ED-1 electron diffractometer (Figure 2) to efficiently provide crystal structures will be explored in the case of pharmaceutical nanocrystals.

Solid form screening during drug development



ELDICO ED-1 electron diffractometer