

Solid-State Form Design in Drug Product Development

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Pharmaceutical molecules have the miraculous property to exist in multiple solid-state forms i.e. polymorphs, hydrates, salts, co-crystals. These solid-state forms have different physicochemical properties such as solubility, dissolution rate, stability, wettability, compressibility etc. due to their varied 3-D molecular arrangements. Crystal engineering is one of the key approaches which is utilized to dial in the desired solid-state properties to obtain the optimum drug product. In this presentation, we will be discussing how crystal engineering is being utilized in pharmaceutical industry to design solid state forms with desired solid-state properties with respect to drug substance manufacturability, drug product processability and performance. In addition, various computational tools including crystal structure prediction, CCDC tools which aid in solid form design will be discussed.

Case studies will be shared to highlight the designing of solid state form for desired properties to obtain optimum drug product.

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