

Understanding the Disordered State of Matter in Pharmaceutical Development

Vishal Koradia

Technical Research & Development, Novartis Pharma AG, Basel, Switzerland

vishal.koradia@novartis.com

Many pharmaceutically relevant materials - active pharmaceutical ingredients, excipients, and formulations possess disordered arrangement. The significance of disordered state towards pharmaceutical product performance in terms of stability, bioavailability and processing is well established. A deliberate use of the disordered material in formulations such as solid dispersion provides an important tool to enhance bioavailability. On the other hand, disordered state may unintentionally introduced during pharmaceutical processes of milling and compression among others. In either of these cases, a thorough characterization and understanding of the disordered state is required. This presentation will focus on approaches of grazing incidence measurements and pair distribution function analysis to probe the disordered material in pharmaceutical development. It will also present evaluation of difference in the disordered state produced by different processes.