

**W0236**

**Variable Relative Humidity X-Ray Powder Diffraction Studies of Pharmaceutical Materials: Tools and Applications.** C. S. Frampton, Pharmorphix Ltd., 250 Cambridge Science Park, Milton Road, Cambridge, CB4 0WE, U.K.

A major step along the development pathway of a pharmaceutical material is the study and quantification of any inherent polymorphic behavior. Pharmaceutical processing, environmental stressing and storage can profoundly affect the crystal structure of the active pharmaceutical ingredient and as a consequence the biological performance of the final dosage form. Many changes in crystalline form can be attributed to the formation of stable and/or metastable hydrate species. To understand better how a material will react to these particular stressing conditions both variable temperature (VT) and variable relative humidity (VRH) XRPD can be employed to monitor any changes in the crystalline behavior of the material. These changes are often a result of solid-state reactions and/or phase transitions that may have occurred as a result of such a treatment.

The presentation will focus primarily on the acquisition of XRPD data in an environment of controlled relative humidity covering both the practicalities of making such measurements and on the results obtained from several interesting samples.