



Moisture Measurements

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27 January 2022 | 13:00 – 14:00 (GMT)



Chair **Dr. Jasmine Bone MIMMM**

University of Surrey

The effects of moisture absorption on materials have been studied extensively in academia and in industry. Water can have numerous effects on material performance, and it is therefore essential to be able to measure and characterise how moisture absorbs into a material, and its subsequent effects on properties. This webinar provides an introduction to various moisture measurement techniques and their relevance in industrial applications.

Traceable measurements of moisture or water content

Paul Carroll, National Physical Laboratory



NPL makes measurements of material bulk moisture content, or of water content specifically, using various physical methods. A range of instruments utilising gravimetric, evolved vapour coulometric and microwave resonance principles are available. Measurement traceability comes from certified reference materials and traceability of supporting weighings to national standard of mass. In this talk, the evolved vapour coulometric measurement approach will be introduced with example moisture content measurements on a variety of materials and sample types with values measured in a range down to trace amounts of water presented. An alternative calibration approach for this instrument using as a reference the water content of humid gas of defined dew point traceable to the SI via national humidity standards will be introduced.

The application of dynamic vapour sorption techniques to characterise minerals functionality

Meishan Guo, Surface Measurement Systems



Characterisation of the surface of minerals is important for predicting the behaviour of the system which the materials are later used in, be that paint, polymers, clays, building materials or asphalt. A detailed knowledge of the physico-chemical properties of the mineral surface is required. Inverse gas Chromatography (IGC SEA) is a fast and accurate method for the characterisation of mineral surfaces in terms of their dispersive and acid-base properties. Studying the moisture transport behaviour in minerals, like talc, is essential to improve their performance and Dynamic Vapour Sorption (DVS) is an excellent tool for determining the surface area and chemistry of the particles at all stages of processing.

From Aerogels to X-rays, the importance of moisture control

Dr. Nick Bazin, AWE

Moisture content in materials affects many aspects of R&D at AWE. From aerogel manufacture for plasma physics experiments and controlled foaming of polymers to high performance x-ray scintillators, a brief discussion of how the moisture content affects and is controlled for these applications will be presented.

