Contribution ID: **825** Type: **Poster (+) Presentation**

Measuring co-diffusion kinetics on thin films

Wednesday, 2 June 2021 16:00 (1 hour)

Moisture transport characteristics of porous materials play an important role in many industries. For example; packaging materials which can be directly related to shelf life and packaged product stability; model membranes which are widely used in in-vitro permeation studies in skin care industry; and electrospun nanofibres for polymeric scaffolds. Moisture vapour transmission rate (MVTR) measurements are generally carried out under isothermal conditions and describe the rate of water permeating through a test specimen into the headspace volume of a container which differs in relative humidity (ΔRH).

Dynamic gravimetric vapour sorption (DVS) is a well-established method for the determination of vapour sorption isotherms. The high mass resolution and excellent baseline stability of DVS allows the fast and accurate determination of water sorption isotherms and diffusion kinetics over a wide range of temperature and humidity. DVS equipped with Speed of Sound sensor, is a very sensitive tool to measure organic vapour sorption and desorption. Furthermore, it is also capable of studying co-adsorption isotherms using two vapours, or organic vapour sorption at a particular relative humidity background. DVS instrument therefore can be used to determine co-diffusion kinetics on thin film samples. In this study, the diffusion of methanol, water and water-methanol co-diffusion through Kapton film at different temperatures were investigated using a specially designed Payne diffusion cell and DVS instrument.

Time Block Preference

Time Block B (14:00-17:00 CET)

References

1: Surface Measurement Systems Ltd., Unit 5, Wharfside, Rosemont Roan, Alperton, London, HA0 4PE, UK
2: Surface Measurement Systems Ltd., 2125 28th street SW, Suite 1, Allentown, PA 18103, USA

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