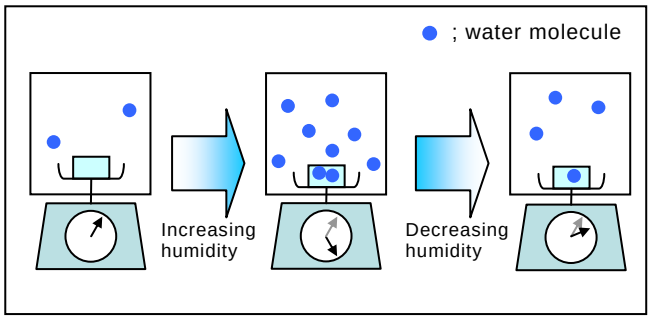
Evaluation of Moisture Sorption Property

Overview

It is well known that the particular features of water with generating by the hydrogen bonds make a considerable effect on physical or chemical properties of the materials. Then, it is very important to study the sorption properties of water on materials of all kinds of organic, inorganic and polymer substance, and drugs, and catalysts etc. Thermogravimetric analysis on changing the humidity is the useful method to evaluate the moisture sorption properties with materials. By continuously monitoring the changes in mass, it is possible to study the sorption behavior not only in the equilibrium state but also transitional state.



Examples: Evaluation of moisture sorption of polymer film

The polymer samples were maintained at a constant temperature, and the humidity was varied from 0% → 80% → 10% (10% range of variation in humidity).

Mass change of the sample showed the similar behavior of humidity change (Fig. 1) and the sorption hysteresis behavior was very low (Fig. 2).

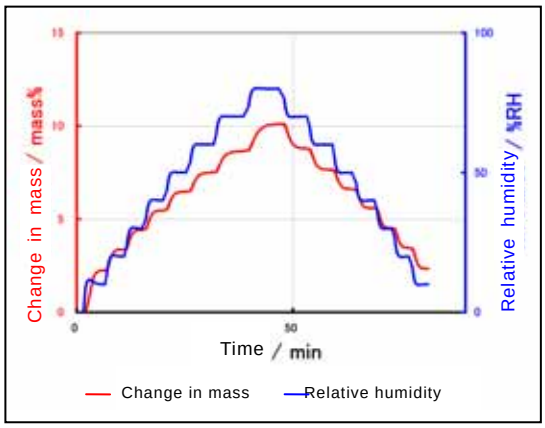


Fig. 1 Mass Change of the sample as stepping the humidity at constant temperature.

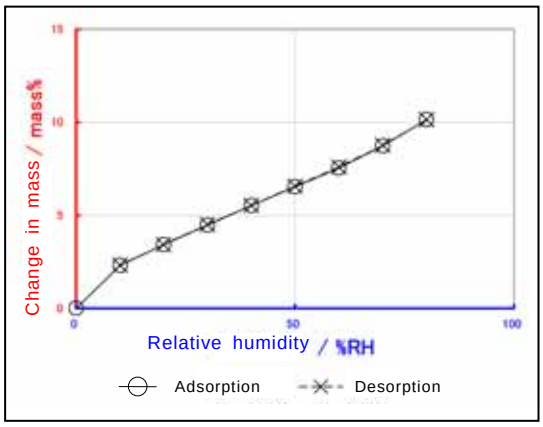


Fig. 2 Isothermal plots of change in mass.

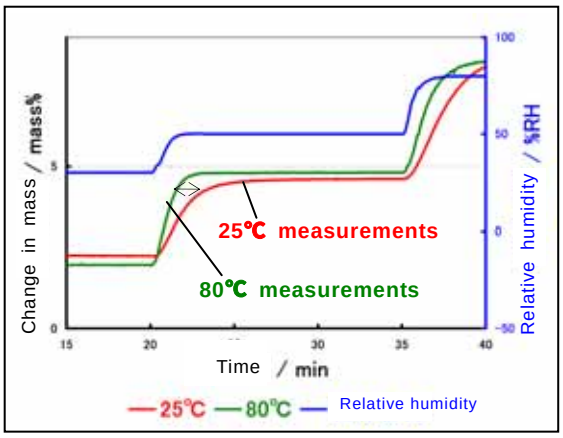


Fig.3 Mass change measured under different temperature.

This polymer sample was also evaluated under different temperature (Fig. 3). The amount and rate of change in mass showed greater, the adsorption rate was faster and the amount of moisture adsorption was larger at the higher temperature (80°C) than at the lower (25°C).

*Total solution partner for **analyses**, **measurements**, and **evaluations**.*
SCAS SINGAPORE PTE LTD
[Laboratory] 17 Sakra Road, Pulau Sakra, Singapore 627886
[Office] 2 Jurong East Street 21, #04-02 IMM Building, Singapore 609601
E-mail: scass@scass.com.sg WEB site: http://www.scass.com.sg/