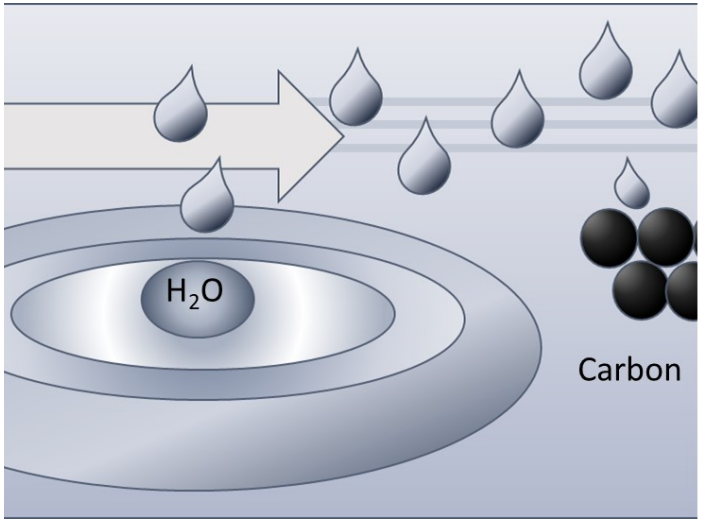
VAMAS

Solid Sorbents
Technical Work Area 39

Call for Participation



Project 2

Measuring H_2O Sorption Isotherms on BAM-P109

Objectives

The objectives of this interlaboratory study are:

- To perform an interlaboratory comparison of water/BAM-P109 (activated porous carbon) adsorption isotherms
- To extract water sorption reference data for the water/BAM-P109 system at 25 °C from these isotherms.
- To recommend measurement best practices for vapor sorption measurements

Background

Adsorbents are candidate materials for many commercial and industrial applications, including carbon capture, catalysis, environmental remediation, natural gas purification, hydrogen and natural gas fuel storage.

Although new and improved adsorbents continue to emerge for the various applications, the pace of innovation is hindered by the lack of robust methods to characterize gas sorption behaviour of materials.

Standardization Needs

There are currently no standards for water adsorption isotherm data. The ISO TC24/SC4 committee has published standards for surface area determination as well as pore size/pore volume characterization of an adsorbent by physical adsorption. The standards are of high relevance for solid sorbents. Work done under the current study will complement ISO TC24/SC4 standardization efforts on solid sorbent materials and feed into new water sorption standardization work.

Work Programme

The study will measure uptake of water vapor on BAM-P109 at 25 °C using a vapor sorption instrument.
Water was chosen for the general interest in water sorption on porous materials, which can provide insights into the hydrophilicity, pore structures, and chemical stability of a material. The adsorbent will be provided for the study along with a study protocol.
Water sorption isotherms may take up to one week or longer to complete.

Deliverables and Dissemination

The resulting methods and data will be made available at the NIST adsorption website and published in a peer-reviewed journal.

The study will feed into ISO water sorption standardization work.

Funding

Participants fund their own involvement in the project.

Status

Samples, generously provided by BAM (Bundesanstalt für Materialforschung und -prüfung, Germany), for the interlaboratory study will be despatched in July 2021 to participants.

Participants will be expected to report results by December 2021.

For more information on participation, please contact:

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