Advanced characterization of porous materials using water vapor sorption

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Water vapor sorption is a powerful tool to investigate in detail the surface chemistry of porous materials. Water as an adsorptive has a very small kinetic diameter which allows it to enter pores even smaller than the ones accessible to carbon dioxide or nitrogen and thus makes it a versatile probe for a wide range of materials. Unfortunately, the interpretation of water vapor sorption isotherms is rather difficult because of the competing effects of pore structure and surface chemistry. Hence, in order to shed more light onto the potential of water adsorption for textural and surface characterization highly ordered and well characterized materials are needed.
In this talk, a general overview of the measurement technique will be given and various examples will be discussed.