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Improving the robustness and reproducibility of gas adsorption isotherm measurements on nanoporous materials

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Gas adsorption is commonly used to characterize the surface area, pore volume and pore size distribution of porous materials, as well as to assess adsorbents for use in gas storage and separation applications. Adsorption isotherms –plots of uptake versus pressure –can be measured using the volumetric and gravimetric techniques, and commercial instruments are widely available for this purpose. To determine the porous properties of materials, experimental isotherm data must then be analyzed using one of a number of different models. Despite the widespread availability of commercial instrumentation and the associated data analysis software, published results have been subject to irreproducibility [1-3]. This may be due to differences in the synthesis of different samples of the same material, material instability, measurement error, or inconsistencies in the analysis of experimental data [4]. This poster addresses the last two of these sources of irreproducibility, by describing five key steps that can be followed to make experimental gas adsorption isotherms on nanoporous materials more robust and reproducible [5].

References:

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