

Gas sorption analyzer sample submission form

Static gas physisorption analysis

Your name; _____

Your department; _____

Account number for billing; _____

Approximate description of the sample

Please provide as much information as possible about the sample, without revealing anything that is confidential. For example it will be helpful to know if the sample is carbon, polymer, metal oxide, or some other material. If you know the approximate specific surface area (SSA) of the sample, that would also be helpful.

Amount of sample provided; _____ **grams**

A typical analysis using N₂ gas requires enough sample to provide 1 m² of surface area. So, if your sample has an estimated specific surface area (SSA) of 10 m²/g, you will need to provide at least 0.1 g (100 mg) to get a good measurement. If the SSA is higher you can get by with less sample

Temperature for vacuum pre-treatment; _____ **torr**

Typical vacuum pre-treatment temperature is 140 C but values up to 350 C are possible. Sample will be treated until steady-state gas emission produces a pressure of less than 0.05 torr

Physisorption gas to be used; _____

Nitrogen is the most commonly used gas for physisorption measurements. Argon and CO₂ are used in special circumstances, and krypton is used for very low SSA materials. Other gases, e.g. hydrocarbons, may also be used in special circumstances. For very low SSA samples or for gases other than nitrogen please contact us for discussion prior to analysis.

Analysis to be performed; _____

Unless otherwise requested, a 40-point adsorption / desorption isotherm analysis will be performed on your sample. In this analysis, using nitrogen as adsorbent, the sample will be chilled to liquid nitrogen temperature under vacuum then dosed with gas 40 times over a reduced pressure range (P/Po) between 0 and 1. The amount of gas adsorbed for each dosing cycle will be recorded. Specific surface area (SSA) will be calculated using the BET method from data for P/Po between 0.05 and 0.3, specific pore volume (SPV) will be calculated using the amount of gas adsorbed at P/Po = 0.98, and the pore size distribution (PSD) will be calculated using the BJH method.

For analysis of micropores (pores smaller than 2 nm), or for samples having very low SSA, or for other gases besides nitrogen, or for data analysis using methods and models different from those listed above, please contact us for discussion prior to analysis.