

Analysis of Physisorption Data

To perform the analysis of physisorption data, download the original physisorption files from Moodle2 and install the MicroActive software on your PC.

The analysis of each sample must be done as follow:

1. Open the data file in MicroActive software.
2. Control each plot (isotherm, BET, Lanmuir, t-plot, BJH adsorption, BJH desorption) and select the right range of points to be included in the analysis. For BJH, remove points above $p/p_0 = 0.99$.
3. Click on Preview (right, bottom) and save the report as an Excel file. In the Excel file, you will find all the data saved in various sheets. Not all the sheets are required and the same type of data are reported different times.

To present the data of a single materials:

1. Draw the physisorption isotherm (both branches) and comment the type of isotherm and the type of hysteresis on the bases of IUPAC recommendation.
2. The data analysed following the BET and the Langmuir models (BET Tabular Report and Langmuir Tabular Report): plot the two graphs, calculate the straight line to fit the data and discuss which model fits better the experimental results. On the basis of this, assign the surface area of the material on the basis of the better fitting model.
3. Plot the t-plot, calculate the straight lines to determine the micropore pore volume and external surface area (if possible).
4. The data regarding pore size distribution from both adsorption and desorption branches: plot $dV/d(\log D)$ vs Average Pore Diameter (in logarithmic scale) and comment about size of pores related with the shape of physisorption isotherm and about differences between size distribution obtained for the 2 branches.
5. Summarize all the results in a Table:

Sample	
Surface area (m^2/g)	
Micropore volume (cm^3/g)	
External surface area (m^2/g)	
Maxima of pore size distribution (nm) in adsorption	
Cumulative pore volume (cm^3/g) in adsorption	
Maxima of pore size distribution (nm) in desorption	
Cumulative pore volume (cm^3/g) in desorption	

