

## A SAXS outlook on disordered carbonaceous materials for electrochemical energy storage

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### Abstract

Ordered and disordered carbonaceous materials cover a wide range of the energy storage materials market. In this work a thorough analysis of the Small Angle X-ray Scattering (SAXS) patterns of a number of carbon samples for energy storage (including graphite, soft carbon, hard carbon, activated carbon, glassy carbon and carbide-derived carbon) is shown. To do so, innovative geometrical models to describe carbon X-ray scattering have been built to refine the experimental SAXS data. The results obtained provide a full description of the atomic and pore structures of these carbons that in some cases challenge more traditional models. The correlative analysis of the descriptors here used provide novel insight into disordered carbons and can be used to shed light in charge storage mechanisms and to design improved carbonaceous materials.

### Graphical abstract

