

Characterization of Clay Minerals through X-ray Diffraction and Rigorous Data Curation

Dr. Anja Vieira Dosen, International Centre for Diffraction Data, USA

The correct identification of clay minerals demands a rigorous approach, particularly in the realms of material science and geology. This presentation focuses on the intricacies of precise clay mineral identification, emphasizing the role of high-quality data within a comprehensive X-ray Diffraction database.

Powder X-ray Diffraction (XRD) is one of the major tools in clay mineral analysis as each XRD scan can represent potentially millions of individual clay particles. Crucial steps in clay mineral analyses include ambient and high-temperature XRD, specific sample treatments, and additional characterization techniques.

A pivotal development is the recent expansion of the meticulously curated clay subfile within the PDF-5+ database. This expansion boosts identification accuracy and contributes to research across various scientific fields, including ceramics, building materials, catalysts, health products, nanomaterials, and nanocomposites.