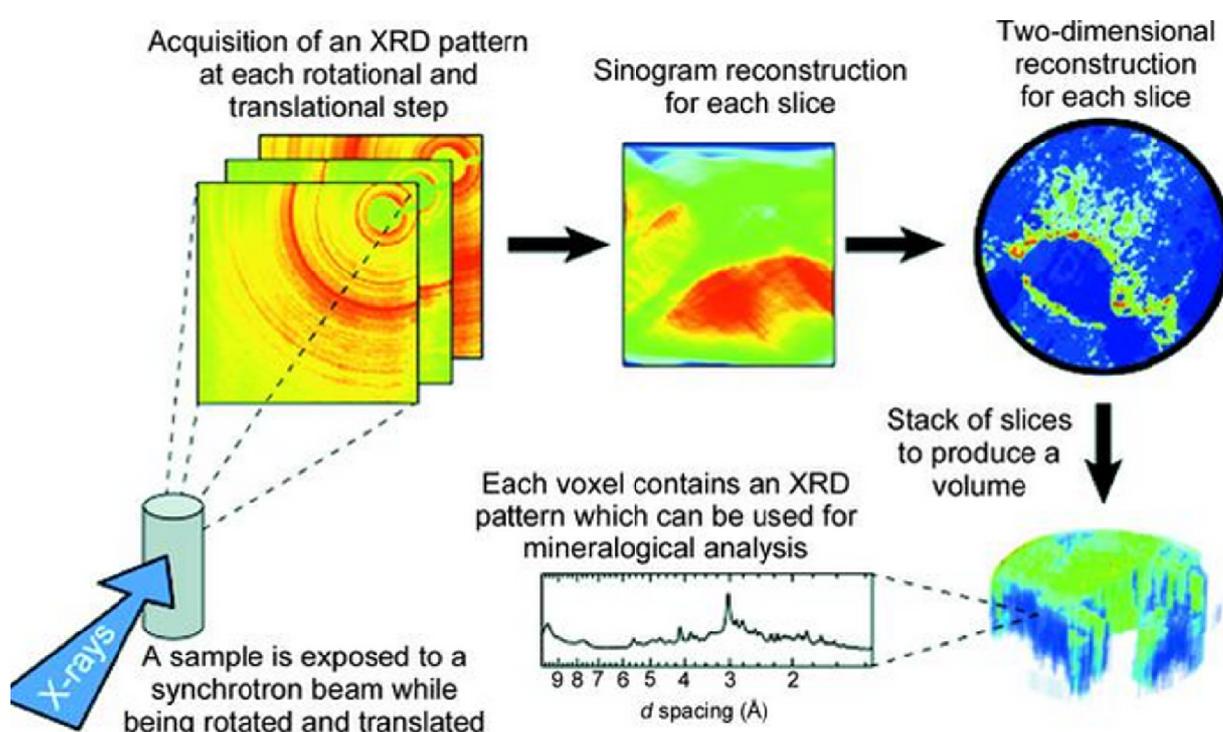


Synchrotron X-ray Diffraction Imaging for Earth and Materials Science

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X-ray diffraction tomography can be useful to depict changes during hydration and ageing cement paste!

Carlotta Giacobbe will try to make sense amongst all the different synchrotron-imaging approaches that we can nowadays have at brilliant sources.

The kinds of results that one can extract, and the difficulties to overcome, are similar to the feature lists you find in established Rietveld refinement examples.

When a sample contains crystallites that are “large enough” then we can measure diffraction spots and adapt single crystal methods to process the data. For liquids, glasses, nanoparticles and finer powders then we turn to powder diffraction or PDF methods instead.

Be prepared that the software for diffraction tomography is somewhat less user friendly and you might need to write some missing pieces yourself. Even with that in mind, there are now many examples in the literature (e.g. meteorites, hydration of concretes, batteries) for mapping out phase fractions, lattice parameters, crystallite sizes, orientations, textures, etc.