

# **Time resolved X-ray diffraction computed tomography for studying real systems under operando conditions**

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Computed tomography with high energy X-ray diffraction (XRD-CT) enables spatially resolved chemical and physical information to be extracted from within the interiors of heterogeneous materials.

Despite having a much higher sensitivity to detect minority phases and subtle chemical changes than absorption and phase contrast computed tomography, until recently XRD-CT has been used to characterize mainly static samples due to the very long data acquisition times (several hours),

Recent technical advancements in x-ray optics and high speed high efficiency photon counting detectors have reduced the data collection time to a few minutes, allowing for the first time to study real working devices in situ under operando conditions.

The principles and application of the method, and recent results in the fields of catalysis, superconducting technology and battery research will be presented and discussed.