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Diffraction computed tomography with X-rays and neutrons

Tuesday, 5 December 2023 14:00 (3 hours)

Diffraction and imaging using X-rays and neutrons are widely utilized in different fields of engineering, biology, chemistry, and/or materials science. The additional information gained from the diffraction signal by X-ray diffraction and computed tomography (XRD-CT) can give this method a distinct advantage in materials science applications compared to classical tomography. Its active development over the last decade revealed structural details in a non-destructive way with unprecedented sensitivity. The current contribution reports an attempt to adopt the well-established XRD-CT technique for neutron diffraction computed tomography (ND-CT). The feasibility of ND-CT is demonstrated, and it is also shown that the ND-CT technique can provide a non-destructive view into the interior of a specially designed "phantom" sample, as well as the commercial Li-ion batteries, delivering structural information consistent with the reference XRD-CT experiments.

Primary authors: SCHÖKEL, Alexander; SENYSHYN, Anatoliy; MÜHLBAUER, Martin J; HOFMANN, Michael; STARON, Peter; MÜLLER, Timo; FISCHER, Torben; LIENERT, Ulrich; KOCHETOV, Vladislav (TUM); PETRY, Winfried

Presenter: KOCHETOV, Vladislav (TUM)

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