

## MS15-P13 | HIGH PRESSURE X-RAY IMAGING AND DIFFRACTION ON THE PSICHÉ BEAMLINE: RECENT RESULTS AND DEVELOPMENTS USING LARGE VOLUME PRESSES

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PSICH (Pressure Structure and Imaging by Contrast at High Energy) is a SOLEIL beamline based on a under vacuum multipole wiggler. Using the white beam, both x-ray diffraction and full field tomography can be performed on the beamline, independently or simultaneously on the same sample. The beamline is mainly dedicated to experiments under extreme conditions of pressure combined or not with high temperature using large volume presses (Multi-anvils, Paris Edinburgh).

After a quick overview of the geometry of the beamline, the different experimental set-up which can be implemented in the white beam hut of the beamline will be described, in particular the CAESAR set-up permanently installed on the beamline.

Then I will illustrate the possibilities of the beamline with few examples:

- Determination of the density of amorphous samples and liquids under pressure using pdf and/or 3D imaging
- Synthesis of new materials under high pressure and high temperature
- Observation of the iron  $\alpha - \gamma$  and  $\alpha - \epsilon$  phase transformations by combined 3D tomography and XRD in PE cells

Finally, I will show some recent developments which will improve the quality of the data and the rapidity of the acquisitions allowing some kinetic measurements.