

## In situ environmental cells for Hard X-ray micro-Tomography on ALS-beamline 8.3.2

Hard x-rays can penetrate several mm of material allowing the imaging of sample interiors. The microtomography instrument at beamline 8.3.2 allows for 3D imaging of material samples up to several mm in diameter in a variety of in-situ sample cells that mimic application specific- often extreme - conditions for the material. 3D imaging in realistic and extreme environments elucidates the details of the failure mechanisms and provides a wealth of data that can be used to validate and refine computational models. Validation of such models is necessary to enable rapid, computationally-based design and optimization of new classes of high performance materials.

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