



	<b>Experiment title:</b> <b>Zoom Tomography of sub-<math>\mu\text{m}</math> microstructural features using Kirkpatrick-Baez optics</b>	<b>Experiment number:</b> MA650
<b>Beamline:</b> ID22	<b>Date of experiment:</b> from: 22 Nov 2008 to: 25 Nov 2008	<b>Date of report:</b> 26 Aug 2009
<b>Shifts:</b> 9	<b>Local contact(s):</b> Peter Cloetens	<i>Received at ESRF:</i> 26 Aug 2009
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## Report:

### Results of this experiment haven been published in:

G. Requena, P. Cloetens, W. Altendorfer, C. Poletti, D. Tolnai, F. Warchomicka, H.P. Degischer. "Sub-micrometer synchrotron tomography of multiphase metals using Kirkpatrick–Baez optics". *Scripta Materialia*, 61(2009) 760-763.

### Abstract

High resolution 3D imaging of heterogeneous metals is performed by high energy magnified synchrotron tomography using Kirkpatrick-Baez focusing optics achieving voxel sizes of (50-60 nm)<sup>3</sup>. Absorption and phase contrast are exploited applying holotomographic reconstructions. Microstructural features as small as ~ 180 nm are detected in ternary eutectic Al-Mg<sub>2</sub>Si-Si, SiC particle reinforced AlCu<sub>4</sub>, near  $\beta$ Ti-10V-2Fe-3Al, and in TiB reinforced  $\alpha+\beta$  Ti-6Al-4V. The phase retrieval procedure yields enough contrast to segment the individual phases and analyze their shapes and 3D architecture.