



	<b>Experiment title: Deformation Mechanisms in Metallic Nano-Wires on Flexible Substrates Studied by Sub Micron-Beam Diffraction</b>	<b>Experiment number:</b> MA-330
<b>Beamline:</b> BM32	<b>Date of experiment:</b> from:20.06.2007 to: 26.06.2007	<b>Date of report:</b> 21.09.2007
<b>Shifts:</b> 15	<b>Local contact(s):</b> Dr. Xavier Biquard, Olivier Ulrich	<i>Received at ESRF:</i>
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### Report:

This is a *preliminary report* for the experiment MA-330 at BM32. The final experimental report will be submitted after the data treatment is completed in a few months, probably in January 2008.

According to the proposal, the users characterized strains in metallic Cu features with the lateral size of 6 x 2 and 10 x 3  $\mu\text{m}$  and the thickness of about 1 $\mu\text{m}$  deposited on Kapton during in-situ  $\mu\text{Laue}$  experiments coupled with the external straining of the samples. The samples were strained using a tensile stage TS600 (Anton Paar Ltd.) delivered by users. After the stage was integrated onto the goniometer of the beamline, the Cu features were found using optical microscope and then brought into the beam. Then the samples were stepwise strained and the Laue frames were collected using a MAR detector. At every stage of the straining experiment, the frames were collected with the spatial resolution of about 1 $\mu\text{m}$ . The experiments were performed with the beamsize of about 1.5 x 1  $\mu\text{m}$ . In this way it was possible to map the strain distribution in the Cu wires position resolved.

The final treatment of the data should provide an information on the residual stress and dislocation density in the Cu features as a function of external strain.