



Experiment title: In-situ observation of stress and texture development during hot torsional deformation of AlMg3 and AlSi alloy samples

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Dynamic *in-situ* investigation of the texture and strain state within a plastically deformed solid AlMg3 torsion sample using high energy synchrotron radiation

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Abstract. A solid torsion sample made from non-age hardenable single-phase Al alloy AlMg3 is continuously deformed until failure. The low speed deformation with free ends is carried out at room temperature. For the first time, the dynamic *in-situ* development of the local texture and strain state within the sample are observed by means of a novel strain and texture scanning technique. The technique is based on the combination of a microfocussed high energy synchrotron beam, a conical slit system and a large area x-ray detector. The experimental results clearly show the deformation dependent evolution of axial forces (the so-called Swift effect). The texture development exhibits a change from the initial 111 / 100 fibre texture to the dominance of ideal torsion texture orientations.

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