



Contribution ID: 31

Type: **Poster**

## **In-situ tensile deformation behaviour of a high ductile Mg-RE alloy via neutron diffraction**

*Tuesday 19 July 2016 16:50 (2h 40m)*

The applications of magnesium alloys have been increasing now days, because they are not only developed as structural materials for transportation or other industrial applications, but also as biodegradable medical implant materials. A new Mg-RE alloy was developed by micro-alloying method (RE < 0.4 wt.%), which achieves high ductility and good corrosion resistance at MagIC, HZG. Both of the average tensile elongation and compression ratio at room temperature are over 30%. Meanwhile, the yield strength of tension is nearly the same as that of compression. In-situ tensile test were investigated by neutron to investigate first the deformation behavior; and second the texture evolution which can be related to the deformation mechanism, and finally to understand why the as-cast Mg-RE alloys show such a high tensile ductility.

Results showed that a dominated basal fiber texture was gradually developed with the increase of tensile strain. However, before the samples failed a (10.0) fibre texture showed a similar intensity to that in (00.2), which means more activations of the non-basal slip planes during tensile deformation. This could greatly contribute to a relatively high elongation of this new Mg-RE alloy at room temperature.

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**Session Classification:** Poster Session

**Track Classification:** Engineering & Industrial applications