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# Micro and macro texture evolution during multiaxial forging of a WE43 magnesium alloy

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## Abstract

The deformation texture evolution of a WE43 magnesium alloy was investigated by imposing consecutive multiaxial forging at 400 °C. Obtained results implied that although a strengthened basal texture was achieved after one multiaxial forging pass with basal planes of most grains perpendicular to the final forging direction, a random basal texture was attained after three deformation passes which was attributed to the formation of a new <5-4-13> texture component parallel to the transverse direction. The contribution of both particle stimulated nucleation mechanism, as well as continuous dynamic recrystallization, were proposed as determining factors in the creation of the new rare earth texture component. The later findings confirmed that the strain induced partial dissolution of eutectic phases contributed to the counteracting the particle stimulated nucleation mechanism which thereby resulted in the disappearance of the novel rare earth texture component formed at three deformation passes along with the increase in the maximum texture intensity at fifth passes of deformation.

**Keywords:** Magnesium alloys; Rare earth elements; Texture component; Multiaxial forging; EBSD; Texture evolution

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