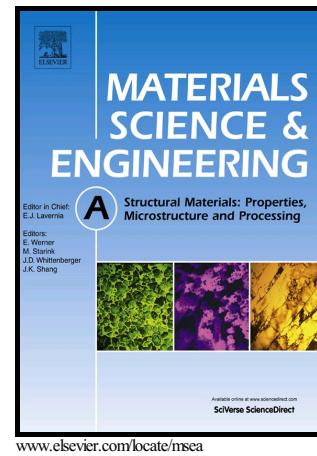


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# **$\{10\bar{1}2\}-\{10\bar{1}2\}$ double tensile twinning in a Mg-3Al-1Zn alloy sheet during cyclic deformation**

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## **Abstract**

The typical fracture morphology of the Mg-3Al-1Zn alloy after cyclic deformation was investigated using optical microscopy (OM), and an electron back-scatter diffraction (EBSD). A novel finding of this study is that large number of stripe-like laminas were found within the primary  $\{10\bar{1}2\}$  tensile twins in the crack initiation and crack propagation regions. It is shown that these laminas primarily result from  $\{10\bar{1}2\}-\{10\bar{1}2\}$  twinning during cyclic deformation. According to the results and combined with theoretical analysis, the formation of  $\{10\bar{1}2\}-\{10\bar{1}2\}$  twins are largely contributing to the local strain accommodation caused by different twin variants.

**Keywords:**  $\{10\bar{1}2\}-\{10\bar{1}2\}$  twin laminas; AZ31 Mg alloy; Twinning; Detwinning; Fracture

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