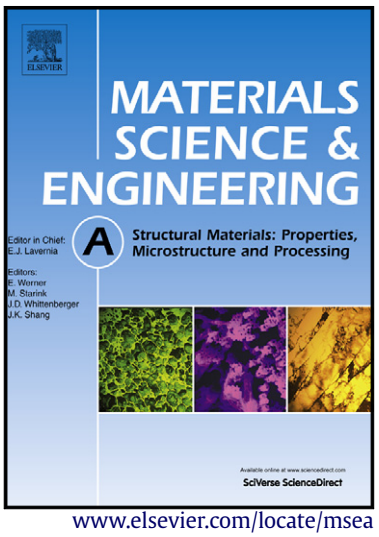

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Plastic deformation and damage induced by fatigue in TWIP steels

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Abstract

Twinning Induced Plasticity steels exhibit a high strain hardening rate which translates into a remarkable combination of ductility and strength. A thorough experimental approach was performed by advanced characterization techniques to study the deformation mechanisms developed under high cycle fatigue conditions. Results clearly lay out that the cumulative strain damage leads to strengthening but also induces micro-cracks at the intersection of twin boundaries which promote fracture.

Keywords: Twinning Induced Plasticity; High Cycle Fatigue; fracture mechanisms; deformation mechanisms.