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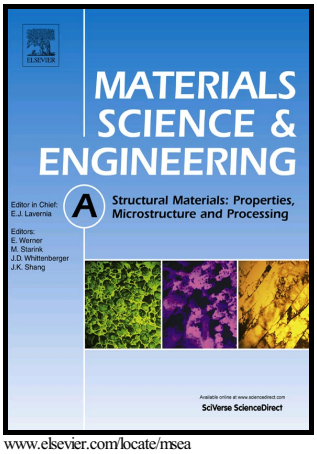

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Evolutionary anisotropy and flow stress in advanced high strength steels under loading path changes

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Abstract

Chaboche kinematic hardening, Yoshida–Uemori, and homogenous anisotropic hardening (HAH) models were evaluated in terms of their prediction capability of flow stress and evolutionary r-value under loading path changes. The first two models are based on kinematic hardening, whereas the HAH model is based on distortional hardening. Continuous compression–tension (CT) tests with pre-strains for dual-phase 780 and transformation-induced plasticity (TRIP) 780 steel sheets were conducted. For the initial anisotropy described by the Yld2000-2d model, uniaxial tension tests for three material orientations and a biaxial test were performed. During the CT tests, both stress and r-value variations with