Visco-Plastic Self-Consistent (VPSC) Deformation Simulation on FCC Polycrystalline Aluminum

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deformation

Tension state at strain $\varepsilon_{33}=2.0$

initial distribution

texture at strain $\varepsilon_{33}=2.0$

stress-strain behavior
Yield surface at various strain levels

Average rotation angle (°)

Uniaxial tension

Alpha and Kappa hardening curves
deformation

compressed state at strain $\varepsilon_{33}=-2.0$

initial orientation

orientation at strain $\varepsilon_{33}=-2.0$

stress-strain behavior
yield surface, average rotation angle, alpha and kappa hardening predictions

Yield surface at various strain levels

Average rotation angle (°)

Uniaxial compression

Alpha and Kappa hardening curves
texture at strain $\varepsilon_{13}=2.0$

deformation

shear state at strain $\varepsilon_{13}=2.0$

initial distribution

texture at strain $\varepsilon_{13}=2.0$

stress-strain behavior
yield surface, average rotation angle, alpha and kappa hardening predictions

Yield surface at various strain levels

Average rotation angle (°)

Simple shear

Alpha and Kappa hardening curves