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Conclusion and Prospects

List of symbols

α :	Alpha ferrite (BCC)
α' :	Alpha prime martensite (BCC)
ε :	Epsilon martensite (HCP)
ε :	True strain
$\varepsilon^{lat.}$:	Lattice strain
ε_{eq} :	Equivalent deformation
ε_u :	True strain at maximal load
$\varepsilon_y^{lat.}$:	Lattice yield strain
γ :	Austenite (FCC)
γ_b :	Grain boundary energy
σ :	True stress
σ_γ :	Austenite yield strength
σ_{eq} :	Equivalent stress
σ_u :	True stress at maximal load
$\sigma_y^{lat.}$:	Lattice yield strength
τ :	Characteristic timescale depending on the grain growth velocity
A_s :	Austenite starting temperature
c, c_1, c_2 :	Proportionality constants
$d^{lat.}$:	Lattice parameter
$d_0^{lat.}$:	Stress-free lattice parameter
D_i :	Initial diameter
D_f :	Final diameter

$E^{lat.}$: Lattice Young modulus

$f(t)$: Relative amount of transformation (between 0 and 1)

GS : Grain size

ΔG_{crit} : Minimum difference of free energies between two phases to initiate the transformation

$\Delta G_{ch,T}$: Difference of chemical free energies between two phases at a temperature T

I : Number of boundaries intercept

$I(twins)$: Number of twin boundaries intercept

k : Geometric constant

L : Length of the intercepted segments

LP : Lode parameter

M : Grain boundary mobility

M_d : Temperature above which the austenite is stable and no mechanically-induced martensitic transformation can take place

$M_{d(30)}$: Temperature at which 30% of tensile true strain induces a transformation of 50% of the austenite into martensite

M_s : Martensite start temperature, corresponding to the appearance of thermal martensite

M_s^{σ} : Temperature where the stress required to initiate the martensitic transformation reaches the austenite yield strength

MLI_t : Mean linear intercept (including the twin boundaries)

MLI : Mean linear intercept (without the twin boundaries)

n : Avrami exponent

n : Grain growth exponent

n : Work-hardening coefficient

ND : Normal direction

$n_{incr.}$: Incremental work-hardening coefficient

P : Driving pressure for grain growth

$p(twins)$: Proportion of twin boundaries

$\overline{R}$: Grain boundary mean curvature radius

R_1, R_2 : Grain boundary main curvature radii

RD : Rolling direction

SFE_1 : Stacking fault energy at temperature T_1

S_s : Starting section

S_f : Final section

TD : Transverse Direction

t : Time

t_0 : Time at the beginning of the transformation

t_s : Starting thickness

t_f : Final thickness

T_0 : Temperature where the free energy of two phases involved in a transformation are identical

T_N : Néel temperature

T_m : Melting temperature

TR : Stress triaxiality ratio

U : Mechanical free energy

U^{max} : Maximum of mechanical free energy

v : Grain boundary velocity

List of Abbreviations

at.% :	Atomic percent
BCC :	Body-centered cubic
Cr_{eq} :	Chromium equivalent
CPP :	Close-packed plane
CRSS :	Critical resolved shear stress
EBSD :	Electron back-scattered diffraction
FCC :	Face-centered cubic
FSD :	Fore scatter detector
HAGB :	High angle grain boundary
HCP :	Hexagonal close-packed
IPF :	Inverse pole figure
KS :	Kurdjumov-Sachs
LAGB :	Low angle grain boundary
ND :	Neutron diffraction
Ni_{eq} :	Nickel equivalent
NW :	Nishiyama-Wasserman
OIM :	Orientation imaging microscopy
SEM :	Scanning electron microscope
SFE :	Stacking fault energy
TEM :	Transmission electron microscope
ToF :	Time of flight
TRIP :	Transformation-induced plasticity
XRD :	X-ray diffraction
wt.% :	Weight percent