

## NOMENCLATURE

$a_{\alpha'}$	Lattice parameter of martensite
$a_{\gamma}$	Lattice parameter of stabilized austenite
A, B' & $\sigma_0$	Coefficients in Hall petch like equation
B	Peak width at half height in radians
$C_m$	Alloy concentration in the dendrite
$C_{cm}$	wt % cementite
$C_o'$	Average concentration of alloying element in the alloy
$C_{\gamma}^o$	Carbon content in matrix austenite before austempering
$C_{\gamma}$	Carbon content in saturated austenite
$C_{\gamma}^{max}$	Maximum carbon dissolved in austenite
$C_{\gamma g}$	Carbon content in austenite at the graphite/austenite interface
$C_{\alpha g}$	Carbon content in ferrite at the ferrite/austenite interface
$C_{\gamma\alpha}$	Carbon in austenite at the ferrite/austenite interface
$D_C^{\gamma}$	Diffusion coefficient of carbon in austenite
$d_c$	Critical bar diameter
$d_{\alpha}$	Particle size of bainitic ferrite
$e^{-2m}$	Temperature factor
f	Fractional distance between the dendrite arms
F	Structure factor
J	Flux of carbon per unit time
K	Strength coefficient
$k'$	Equilibrium distribution coefficient
k & m	Constants in Avrami equation
$l_{\gamma}$	Thickness of austenite which dissolves carbon during austenitization
$L_p$	Lorentz polarization factor
n	Instantaneous strain hardening exponent

$N_A$	Nodule count
$P$	Multiplicity factor
$Q$	Activation energy for diffusion of carbon in austenite
$r_{\text{cell}}$	Radius of austenite cell surrounding a graphite nodule
$r_g$	Radius of graphite
$R$	Gas constant
$R'$	Strain hardening rate
$T_A$	Austempering temperature
$T_{\text{sd}}$	Temperature of spinodal decomposition
$T_\gamma$	Austenitization temperature
$t$	Transformation time
$t_{0.5}$	Time for 50% transformation
$t_\gamma$	Austenitization time
$t_A$	Austempering time
$X_{\text{uy}}$	Volume fraction of untransformed austenite
$X_{\alpha/\alpha'}$	Volume fraction of ferrite and martensite
$X_\gamma$	Volume fraction of austenite
$X_\gamma^{\text{max}}$	Maximum volume fraction of austenite
$\alpha$	Acicular ferrite
$\alpha'$	Martensite
$\gamma_0$	Austenite before austempering
$\gamma$	High carbon austenite
$\varepsilon$	True strain
$\theta_B$	Angle of diffraction from plane
$\sigma$	True stress
$\rho_\gamma$	Density of austenite
$\rho_g$	Density of graphite
$\rho_0$	Density of ductile iron
$\lambda$	Wavelength of X-Ray used for diffraction