List of Symbols

There are cases when some of these symbols are used to denote a quantity other than mentioned below. In this case a note is presented to that effect.

a	radius of sphere, boundary of concentric layer
a_0 and a_1	thermal diffusivities of the phase materials
a_1 and a_2	longitudinal and transverse dimensions of inclusions
b	boundary of concentric layer
c_0	specific heat of liquid phase
c_1	specific heat of solid phase
c_{e0}	effective specific heat of liquid phase
c_{e1}	effective specific heat of solid phase
h	rate of interphase heat transfer in unit volume of system
h_e	rate of interphase heat transfer referred to unit volume of the heterogeneous [phase]
$i = \sqrt{-1}$	
j_0 and j_1	strength of heat sources per unit volume of phase materials
j_{e0}	effective strength of average heat sources in the liquid phase, referred to unit volume of the medium
j_{e1}	effective strength of average heat sources in the solid phase, referred to unit volume of the medium
k	impurity (inclusion) distribution factor
l	characteristic linear scale of the internal structure of the heterogeneous medium

m	mass of particle
n	mean denumerable concentration of particles in the system
$\mathbf{n}$	unit normal vector
p	Laplace variable
$\mathbf{q}$	mean heat flux density
$\mathbf{q}_{e0}$	effective mean heat flux density in the "continuous" phase
$\mathbf{q}_{e1}$	effective mean heat flux density in the "dispersed" phase
$\mathbf{q}_{f0}$, $\mathbf{q}_{f1}$, $\mathbf{q}$	heat flux densities defined in Eqs. (I.45) and (I.51)
r	radial coordinate
$\mathbf{r}$	radius vector
s	contact-spot area
t	time
$\mathbf{u}$	mean velocity of liquid in the pore space
$\mathbf{u} = \mathbf{v}_0 - \mathbf{v}_1$	mean relative velocity of the continuous phase
$\mathbf{u}_f$	mean filtration velocity
x, y, z	Cartesian coordinates
Bi	Biot number
Fo	Fourier number
C	specific heat of unit volume of substance; concentration
D	effective diffusion coefficient
E	Young's modulus
$H(\mathbf{r})$	Heaviside's step function
$\mathbf{I}$	unit tensor
$I_n(x)$, $I_{n/2}(x)$	modified Bessel functions
J	strength of internal heat sources
$\mathbf{J}$	volumetric density of mass sources
$K_\alpha(x)$	MacDonald's function
L	characteristic linear dimension of the variation of the quantity representing the average properties of the heterogeneous medium
$L_n(x)$	Laguerre polynomial
N	number of particles in system
$P_n(x)$	Legendre polynomial
Pr	Prandtl number
$\mathbf{Q}$	mass flux
$\mathbf{Q}_0$, $\mathbf{Q}_1$	heat fluxes at the particle surfaces when approaching them from the continuous-medium and from the particle sides, respectively
S	specific area of phase interface surface
T	temperature inside of particle; detailed temperature, which is a function of the mutual location of particles within the layer
T^0	initial temperature; temperature in pure medium
T^j	temperature perturbations produced by different particles
T_0	local temperature in continuous medium between the particles
T_1	local temperature within the particles
T_w	surface temperature
$\mathbf{V}$	velocity
α	heat transfer coefficient; distribution factor

α_c	some effective coefficient per unit phase interface surface area; heat transfer coefficient
δ	compression distance
$\delta(\mathbf{r})$	vectorial delta function
ε	porosity; volumetric concentration of continuous phase (mean porosity of the system)
ζ	coordination number
θ	characteristic function defined in Eq. (I.22); angular variable
ϑ	angular variable
$\kappa = \lambda_1/\lambda_0$	see Eq. (II.7)
λ, λ_0	effective thermal conductivity
λ_0	thermal conductivity of the liquid-phase material
λ_1	thermal conductivity of the solid-phase material
λ_e	effective thermal conductivity of the heterogeneous medium
λ_{e0}	effective thermal conductivity of the "continuous" phase
λ_{e1}	effective thermal conductivity of the "dispersed" phase
λ_f	thermal conductivity of some fictitious phase in the vicinity of the test particle
$\hat{\lambda}$	tensor of effective thermal conductivity
ρ_0	density of liquid phase
ρ_1	density of solid phase
σ	strength of surface heat sources; Poisson's ratio
τ	temperature of medium
τ^0	temperature at zero value of coordinate
τ^*	temperature perturbation
τ_0	mean temperature of "continuous" (liquid) phase
τ_1	mean temperature of "dispersed" (solid) phase
ϕ	probability density
φ	mean volumetric concentration of solid phase
ω, ω_0	frequencies
Λ	thermal diffusivity
Φ	distribution function
Ω	set of oriented variables for a single particle.

In general, subscripts 0 and 1 pertain to the continuous and dispersed media, respectively.

The symbol $\sim$ is used primarily to indicate order of magnitude.