NOMENCLATURE

A	area	m^2
a (= $\lambda/c_p \rho$)	coefficient of heat diffusivity	$m^2 s^{-1}$
a	interfacial area	m^{-1}
a_p	fugacity	$N \cdot m^{-2}$
C	molar heat capacity	$J \cdot mol^{-1} \cdot K^{-1}$
C_p	molar heat capacity at constant pressure	$J \cdot mol^{-1} \cdot K^{-1}$
C_v	molar heat capacity at constant volume	$J \cdot mol^{-1} \cdot K^{-1}$
c	molar concentration	$mol \cdot m^{-3}$
c_p	specific heat at constant pressure	$J \cdot kg^{-1} \cdot K^{-1}$
c_v	specific heat at constant volume	$J \cdot kg^{-1} \cdot K^{-1}$
D	molecular diffusivity	$m^2 \cdot s^{-1}$
D_{AB}	molecular diffusivity of component A through B	$m^2 \cdot s^{-1}$
D_L	coefficient of axial dispersion	$m^2 \cdot s^{-1}$
d	diameter	m
E	molar or specific energy	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
E	modulus of elasticity	$N \cdot m^{-2}$
E (= p/x)	Henry's constant	$N \cdot m^{-2}$
e	energy	J
F	molar or specific Helmholtz energy	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
f_p	coefficient of fugacity	
G	molar or specific Gibbs energy	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
G	mass flux (mass velocity)	$kg \cdot m^{-2}$
g	acceleration due to gravity	$m^2 \cdot s^{-1}$
H	molar or specific enthalpy	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
h	enthalpy	J
k	Boltzmann constant	$J \cdot K^{-1}$
k (k_1, k_2,...)	rate of reaction constant	
k	coefficient of power-law fluid	$N \cdot s^n \cdot m^{-2}$
k (e.g., k_c, k_L, k_p, k_x)	mass transfer coefficient	
k	polytropic coefficient	
k'	generalized coefficient of power-law fluid	$N \cdot s^{n'} \cdot m^{-2}$
k^*	mass transfer coefficient with chemical reaction	
L	lenght, characteristic linear dimension	m
L	molar or specific absolute work	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
L_s	lost work	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
L_t	technical work	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
l	length, characteristic linear dimension	m
l	absolute work	J
l_t	technical work	J
$\bar{l}_s$	mean free path of molecule	m

M	molecular weight	$kgmol^{-1}$
m	mass	kg
N	power	W
N_A	molar mass flux of component A	$mol \cdot m^{-2} \cdot s^{-1}$
n	number of rotations per unit time	s^{-1}
n	exponent in a power-law fluid	
n'	flow behavior index	
P	pressure, saturated vapor pressure	$N \cdot m^{-2}$
p	pressure, partial pressure	$N \cdot m^{-2}$
q	heat	J
q_v	density of heat source	$W \cdot m^{-3}$
$\boldsymbol{R}$	universal gas constant	$J \cdot mol^{-1} \cdot K^{-1}$
R_A	molar rate of generation or sinking of comp. A	$mol \cdot s^{-1}$
r	radius, coordinate	m
r	reaction rate	$mol \cdot m^{-3} \cdot s^{-1}$
S	molar or specific entropy	$J \cdot mol^{-1} \cdot K^{-1}$; $J \cdot kg^{-1} \cdot K^{-1}$
S	Sutherland constant	K
T	temperature	K
t	time	s
U	molar or specific internal energy	$J \cdot mol^{-1}$; $J \cdot kg^{-1}$
u	internal energy	J
u	mean linear velocity	$m \cdot s^{-1}$
u_c	sonic velocity	$m \cdot s^{-1}$
V	molar or specific volume	$m^3 \cdot mol^{-1}$; $m^3 \cdot kg^{-1}$
$\overline{V}$	molar partial volume	$m^3 \cdot mol^{-1}$
$\overline{V}^*$	apparent molar partial volume	$m^3 \cdot mol^{-1}$
v	volume	m^3
υ	linear velocity	$m \cdot s^{-1}$
W	mass flow rate	$kg \cdot s^{-1}$
X	unit concentration	
x	length, coordinate	m
x	molar fraction	
Y	unit concentration	
y	length, coordinate	m
z	length, coordinate	m
z	compressibility factor	
α	correction factor in equation of kinetic energy of a fluid	
α	heat transfer coefficient	$W \cdot m^{-2} \cdot K^{-1}$
β	coefficient of thermal expansion	K^{-1}
β' (= $\lvert M-M_0 \rvert / \rho$)	coefficient	$m^3 \cdot mol^{-1}$
Γ	flow rate per unit width	$kg \cdot m^{-1} \cdot s^{-1}$
γ	activity coefficient	

δ	film thickness	m
δ	solubility coefficient	$J^{1/2}\cdot m^{-3/2}$
δ_{eq} $[= (\nu^2/g)^{1/3}]$	equivalent linear dimension	m
ε	porosity	
ε	force constant	J
θ	angle, coordinate	rad
θ_r	relaxation time	s
θ_w	wetting angle	rad
κ	adiabatic coefficient	
λ	specific thermal conductivity	$W\cdot m^{-1}\cdot K^{-1}$
λ	drag coefficient	
μ	dynamic viscosity	$N\cdot s\cdot m^{-2}$
μ	dipole momentum	C·m
μ_p	plastic viscosity	$N\cdot s\cdot m^{-2}$
ν	kinematic viscosity	$m^2\cdot s^{-1}$
ρ	density	$kg\cdot m^{-3}$
σ	surface tension	$N\cdot m^{-1}$
σ	force constant	m
τ	shear stress	$N\cdot m^{-2}$
τ_0	parameter in the Bingham plastic model	$N\cdot m^{-2}$
$\Phi[= V/(RT_c/p_c)]$	ideal reduced volume	
ϕ	angle, coordinate	rad
φ	relative humidity	
ψ	sphericity	
ω	coefficient of expansion	
ω	Pitzer acentric parameter	

Subscripts: c = value in critical conditions, i = mixture component, m = mean value or for a mixture, r = reduced value.
Superscripts: a dot means time derivative.

Note: Nomenclature contains list of the more important symbols used in text and in the tables and diagrams. The remaining symbols not listed in the nomenclature are explained in text. Dimensionless numbers are separately defined.