### LIST OF SYMBOLS

- $C_{pt}$: heat capacity of particles, [JKg$^{-1}$ K$^{-1}$]
- $C_s$: heat capacity of the solid (porous matrix) material, [J/kgK]
- $C_v$: heat capacity of fluid at constant volume, [JKg$^{-1}$ K$^{-1}$]
- $d$: depth of layer, [m]
- $e$: charge of an electron
- $F$: dimensionless kinematic viscoelasticity
- $g$: acceleration due to gravity, [ms$^{-2}$]
- $H$: magnetic field, [G]
- $\Omega$: rotation vector
- $K$: Stokes’ drag coefficient, [Kgs$^{-1}$]
- $k$: wave number, [m$^{-1}$]
- $k_x, k_y$: components of wave number $k$ along x-axis, y-axis, [m$^{-1}$]
- $k_1$: medium permeability, [m$^2$]
- $M$: Hall currents parameter
- $m$: mass of single particle, [g]
- $n$: growth rate, [s$^{-1}$]
- $N$: number density of suspended particle
- $N'$: number density of an electron
- $P_1$: dimensionless medium permeability, [-]
- $p_1$: Prandtl number, [-]
- $p_2$: Magnetic Prandtl number, [-]
- $Q$: dimensionless Chandrasekhar number, [-]
- $q'$: effective thermal conductivity of pure fluid, [Wm$^{-1}$K$^{-1}$]
- $q$: filter velocity, [ms$^{-1}$]
- $q_d$: suspended particle velocity
- $R$: Rayleigh number, [-]
\( R_i \) modified Rayleigh number
\( S \) analogous solute Rayleigh number
\( T_A \) Taylor number
\( T \) temperature, [K]
\( t \) time, [s]
\( x \) dimensionless wave number, [-]

**Greek Letters**

\( \alpha \) coefficient of thermal expansion, [K\(^{-1}\)]
\( \beta \) uniform temperature gradient, [K m\(^{-1}\)]
\( \varepsilon \) medium porosity, [-]
\( \eta \) electrical resistivity, [m\(^2\) s\(^{-1}\)]
\( \eta' \) suspended particle radius
\( \theta \) perturbation in temperature, [K]
\( \kappa \) thermal diffusivity, [m\(^2\) s\(^{-1}\)]
\( \mu \) dynamic viscosity [Kgm\(^{-1}\) s\(^{-1}\)]
\( \mu_e \) magnetic permeability, [H m\(^{-1}\)]
\( \nu \) kinematic viscosity, [m\(^2\) s\(^{-1}\)]
\( \nu' \) kinematic viscoelasticity, [m\(^2\) s\(^{-1}\)]
\( \rho \) density [Kg m\(^{-3}\)]
\( \zeta \) z-component of vorticity
\( \xi \) z-component of current density
\( \nabla \) del operator
\( \varsigma \) curly operator