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NOMENCLATURE

The following is a list of some of the main symbols used in this thesis:

A	Area (m^2)
AR	Aspect ratio; H/L
B_n	Bingham number
C_p	Constant pressure specific heat; $J/kg \cdot K$
x	Coordinate direction; m
y	Coordinate direction; m
T_c	Cold side temperature; K
T_h	Hot side temperature; K
U	Dimensionless velocity
D_a	Darcy number; k_m/H^2
K_f	Fluid thermal conductivity; $W/m \cdot K$
K_s	Solid thermal conductivity; $W/m \cdot K$
Gr	Grashof number; $g \beta (T_h - T_c)L^3/\nu^2$
g	Gravitational acceleration; m/s^2
H	Height; m
L	width; m
h	Heat transfer coefficient; $W/m^2 \cdot K$
T_h	Hot side temperature; K
Nu_y	Local Nusselt number
Nu	Nusselt number; hL/k
Pr	Prandtl number; ν/α
P	Pressure; N/m^2
T_o	Reference temperature; K
Ra	Rayleigh number; $\beta g (T_h - T_c)L^3/\nu\alpha$
Δt	Time step; sec
t	Time; sec
V	Volume or dimensionless velocity
v	Velocity component; m/s
u	Velocity component; m/s

Greek Symbols

ρ	Density; Kg/m^3
μ	Fluid dynamic viscosity; $(N \cdot s/m^2)$
α	Thermal diffusivity; $k/(\rho c_p)$
β	Volumetric expansion coefficient; m^3/s
ν	Fluid kinematics viscosity; m^2/s
γ	Angle of inclination
τ	Dimensionless time; $(t^*\alpha/L^2)$
θ	Dimensionless temperature, $(T - T_c / T_h - T_c)$

ABBREVIATIONS

AFMG	Accelerated Full-Mult-Grid-technique
CFD	Computational Fluid Dynamics code
CPU	Central Processing Unit
IVB	Inverted Bridgman configuration
PIV	Particle Image Velocimetry
PCB	Printed Circuit Boards
SUR	Successive Under Relaxation
VB	Vertical Bridgman configuration
PDE	Partial differential equation
SIMPLC	semi-implicit method for pressure linked-velocity correction
SIMPLC	semi-implicit method for pressure linked-velocity