

- DA, Wang HP. (Eds.). *Developments and Applications of Non-Newtonian Flows*. ASME, New York, pp. 99-105.
- [14] Keblinski P, Phillpot SR, Choi SUS, Eastman JA, (2002). Mechanisms of heat flow in suspensions of nano-sized particles (nanofluids). *International Journal of Heat and Mass Transfer* 45(4): 855-863. [https://doi.org/10.1016/S0017-9310\(01\)00175-2](https://doi.org/10.1016/S0017-9310(01)00175-2)
- [15] Mahmoudi AH, Pop I, Shahi M, Talebi F. (2013). MHD natural convection and entropy generation in a trapezoidal enclosure using Cu-water nanofluid. *Computers and fluids* 72: 46-62. <https://doi.org/10.1016/j.compfluid.2012.11.014>
- [16] Saleh H, Roslan R, Hashim I. (2011). Natural convection heat transfer in a nanofluid-filled trapezoidal enclosure. *International Journal of Heat and Mass Transfer* 54(1-3): 194-201. <https://doi.org/10.1016/j.ijheatmasstransfer.2010.09.053>
- [17] Esfe MH, Arani AA, Yan WM, Ehteram H, Aghaie A, Afrand M. (2016). Natural convection in a trapezoidal enclosure filled with carbon nanotube-EG-water nanofluid. *International Journal of Heat and Mass Transfer* 92: 76-82. <https://doi.org/10.1016/j.ijheatmasstransfer.2015.08.036>
- [18] Nayak RK, Bhattacharyya S, Pop I. (2018). Effects of nanoparticles dispersion on the mixed convection of a nanofluid in a skewed enclosure. *International Journal of Heat and Mass Transfer* 125: 908-919. <https://doi.org/10.1016/j.ijheatmasstransfer.2018.04.088>
- [19] Sharma B, Kumar S, Paswan MK. (2018). Analytical solution for mixed convection and MHD flow of electrically conducting non-Newtonian nanofluid with different nanoparticles: A comparative study. *International Journal of Heat and Technology* 36(3): 987-996. <https://doi.org/10.18280/ijht.360327>
- [20] Dutta S, Biswas AK, (2018). Mixed convection analysis of copper-water nanofluids in a rectotrapezoidal enclosure. *Proceedings of the 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP), IIT Bombay, Mumbai, India, pp. 1-4.*
- [21] Xuan Y, Roetzel W. (2000). Conceptions for heat transfer correlation of nanofluids. *International Journal of Heat and Mass Transfer* 43(19): 3701-3707. [https://doi.org/10.1016/S0017-9310\(99\)00369-5](https://doi.org/10.1016/S0017-9310(99)00369-5)
- [22] Wen DS, Ding YL. (2004). Experimental investigation into convective heat transfer of nanofluids at entrance area under laminar flow region. *International Journal of Heat and Mass Transfer* 47(24): 5181-5188. <https://doi.org/10.1016/j.ijheatmasstransfer.2004.07.012>
- [23] Brinkman HC. (1952). The viscosity of concentrated suspensions and solution. *The Journal of Chemical Physics* 20(4): 571-581. <https://doi.org/10.1063/1.1700493> (2004)
- [24] Zienkiewicz OC, Taylor RL. (1991). *The finite element Method*. 4th ed. McGraw-Hill.
- [25] Abu-Nada E, Oztop HF. (2009). Effects of inclination angle on natural convection in enclosures filled with Cu-water nanofluid. *International Journal of Heat and Fluid Flow* 30(4): 669-678. <https://doi.org/10.1016/j.ijheatfluidflow.2009.02.001>

NOMENCLATURE

c_p	specific heat of the fluid, $\text{Jkg}^{-1}\text{K}^{-1}$
g	acceleration due to gravity, ms^{-2}
h	convective heat transfer coefficient, $\text{Wm}^{-2}\text{K}^{-1}$
k	thermal conductivity, $\text{Wm}^{-1}\text{K}^{-1}$
L	enclosure length, m
Nu	local Heat transfer coefficient, (Nusselt number)
\overline{Nu}	Average heat transfer coefficient, (avg. Nu)
p	pressure, Nm^{-2}
P	non-dimensional pressure
Pr	Prandtl Number (dimensionless)
T	temperature, K
u, v	x, y velocity components, ms^{-1}
U, V	x, y velocity components (dimensionless)
x, y	axial and transverse co ordinates, m

Greek symbols

α	thermal diffusivity
β	thermal expansion coefficient
φ	volume fraction
θ	dimensionless temperature
μ	dynamic viscosity
ν	kinematic viscosity
ρ	density of fluid
ϕ	inclination angle of RT enclosure
ϕ_t	transport variable

Subscripts

avg.	average
b, c	bottom wall, cold wall
f_w	base fluid (water)
nf	nano fluid
p_n	particle (nano-cu)
min/max	minimum maximum
RT	Rectotrapezoidal
Vs.	Versus