An analytical calculation method of 3 base fluids suspend by CNTs hybrid nanoparticle over a vertical circular cylinder with sinusoidal radius

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Abstract

In this research, the specification of 3-dimensional flow stagnation point of hybrid Nano fluids passing through circular cylinder with sinusoidal radius are analyzed. C2H6O2, H2O and Engine oil are used as an ordinary liquid, while nano-particles include SWCNT and MWCNT. Fluid stream is taken into account with/without considering the effect of thermal slippage. Higher order non-linear phrases are transformed to ordinary prime-order differential equations and then solved applying the Analytical Method (HPM) in Matlab-14 software. Graphical analysis of the impressive parameters like: Prandtl number, thermal slip parameter, CNTs volume fraction is precisely checked on the profiles of velocity and temperature for various carbon nanotubes. Consequences display that: cooling process or heat transfer rate can be increased by employing smaller thermal slippage parameter. Further, due to the better thermal conductivity of SWCNT carbon nanotube, the temperature increase in these carbon nanotubes is more than that of MWCNT.

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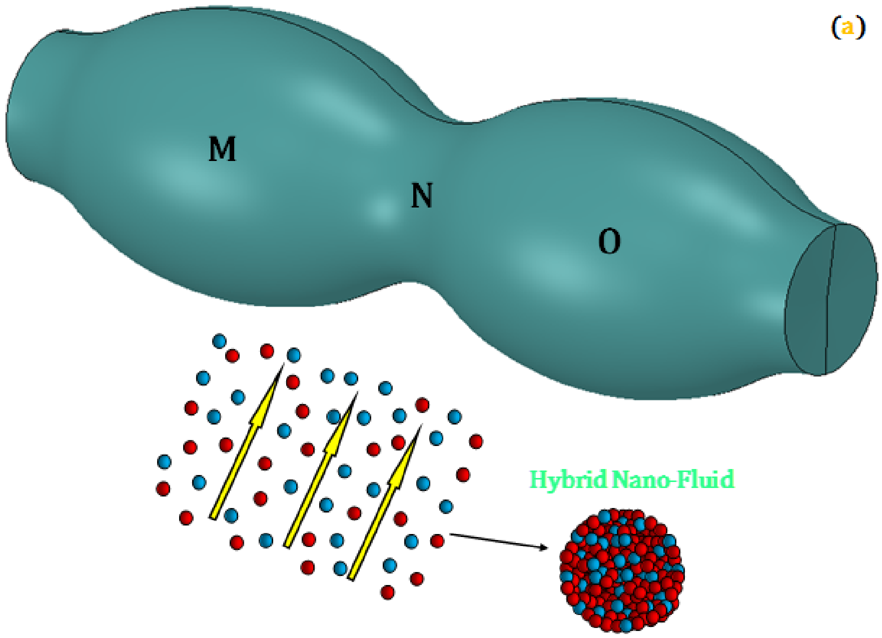

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