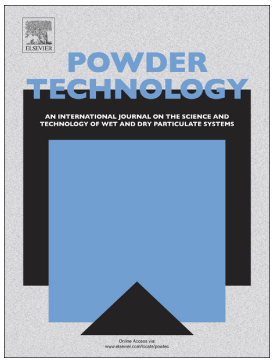

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Influence of Magnetic field and Thermal radiation on convective flow of SWCNTs-water and MWCNTs-water nanofluid between rotating stretchable disks with convective boundary conditions

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Abstract: We have studied MHD boundary layer flow and heat transfer characteristics of single-wall carbon nanotubes (SWCNTs) and multi-wall carbon nanotubes (MWCNTs) with water as the base fluid between two rotating disks with different rotating and stretching velocities by taking thermal radiation and convective boundary conditions numerically in the present analysis. Suitable similarity conversions are employed to reduce non-linear partial differential equations into system of ordinary differential equations and these equations together with boundary conditions are solved numerically using Finite element method. The sway of various pertinent parameters on velocity and temperature distributions as well as skin-friction coefficient and Nusselt number are examined in detail and the results are displayed graphically and in tabular form. It is perceived that the values of Nusselt number escalates near lower disk as the values of nanoparticles volume fraction parameter (φ) increases and rise is remarkably higher in water based multi-wall carbon nanotubes than the single-wall carbon nanotubes. Temperature of the fluid remarkably enhances and is more in SWCNTs-water than MWCNTs-water based nanofluid with higher values of thermal biot number (B_4). With increasing values of B_2 the rate of heat transfer at lower disk Nu_1 improves, whereas, the rate of heat transfer at upper disk Nu_2 diminishes in the both nanofluids.