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(57) Abstract :

ABSTRACT The present work exploresthe thermal energy diffusion and flow in thin films containing mono and hybrid nanofluids, subjected to magnetic fields. The liquid water carrier contains a mixture of copper and aluminum.The Tiwari-Das model is used to simulate the motion and energy equations. Through the use of scaling analysis, the differential equations controlling the physics of the intended model have been found. Shooting procedure combined with the Runge-Kutta-Fehlberg (RKF-45) numerical code yield quantifiable results. The accuracy of the numerical approach used in this inquiry is increased when the resulting outcomes are validated against data accessible in the literature. The influence of different flow parameters is investigated by exploring the dynamics of the thin nano liquid sheet. Compared to the evaluation using spherical particles, the rate of energy transmission of Cu-Al2O3 / water using blade-shaped nanoparticles is increased by 14.7% at a fixed Prandtl number (=2). The inclusion of hybrid nanoparticles positively affects the rate at which heat transfer occurs (RHT). The hybrid nanofluid's temperature and thermal diffusion rate are more noticeable than in the Cu-H2O scenario. The investigation's numerical results are compared to previously published research as a limitingcase and are found to be in good agreement. .

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