

ABSTRACT

Title: On the Hydrothermal Characteristics of MHD Nanofluid Flow

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Improvement in technology requires more energy efficient tools to give more efficiency. Nanofluid and hybrid nanofluid are more efficient due to their high thermal conductivity. In this research we have analyzed various models for nanofluid and hybrid nanofluid flow. First Chapter explores the basics of nanofluid. Nanofluid preparation technique, its stability, applications are also discussed. The main fundamental governing equations are presented in this chapter. Various significant parameters which are responsible for heat and mass transfer are also mentioned. The entropy generation investigation of hybrid nanofluidic transport over an unsteady spinning disk are considered in Chapter 2. The magnetic influence, velocity slips, and thermal radiative effects are included within the flow. Chapter 3 explores a novel conviction of hybrid nanofluid with an enhanced model under inclined magnetic field along with its thermo physical properties. Active and passive control implementation on the nanofluid flow over a stretching cylinder is explored in Chapter 4. Chapter 5 reveals the consequences of steady and unsteady nanofluid flow over a bidirectional stretching sheet. The steady flow of hybrid nanofluid is considered over a rotating disk under magnetic field in Chapter 6. In Chapter 7 we investigated the second order slip effect under multiple convective conditions. Nanofluid flow is taken over a permeable stretching cylinder. We investigated the Casson nanofluid flow over a curved stretching sheet in Chapter 8. In Chapter 9 we investigated the effects of actively and passively controlled nanofluid flow over a wedge. Multiple slippery consequences along a stretching cylinder is considered in Chapter 10. The nanofluid flow on a curved stretching surface under magnetic influence is considered in Chapter 11. Some future research scopes along this direction and a general conclusion on the problems considered in the thesis are also included.

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