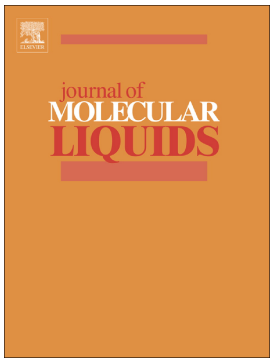

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Assessment of hexahedron and lamina shaped Graphene Oxide nanoparticles suspended in Ethylene and Propylene Glycol influenced by internal heat generation and thermal deposition

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Abstract: The present article aims to investigate stagnation point flow of Graphene oxide nanoparticles suspended nanofluid in presence of induced magnetic field over a stretching cylinder. In order to analyze efficiency in sense of enhanced thermal conductivity two commonly encountered base fluids that are Ethylene glycol and Propylene glycol are taken into account. Mathematical formulation of under discussion physical flow problem is done in cylindrical coordinates. By incorporating similarity approach modeled physical expressions are reduced to a system of differential equations. Governing nonlinear system is solved numerically by using the well-known and stable technique called shooting algorithm. Numerical solutions are compiled by keeping iterative error less than six decimal places. Presence of nanoparticles contributes to enhancing the thermal conductivity of base fluid. This increase is more for Propylene glycol based nanofluid. It is also noted that for shape and size of the nanoparticle plays a vital role in heat transfer mechanism. Moreover, the highest temperature is witnessed for Hexahedron shaped nanoparticle of GO/PG. Maximum skin friction is noted for GO/PG whereas minimum value is observed in case of GO/EG based nanofluid. Nusselt number is higher for lamina shaped nanoparticles of GO/EG based nanofluid.

Keywords: GO/PG; GO/EG; Induced magnetic field; Thermal deposition; Internal

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