

# Effect of particles shape on magnetohydrodynamics hybrid nanofluid flow and heat transfer in porous medium with slip condition

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## Abstract

The objective of the present article is to analyze the magnetohydrodynamic hybrid nanofluid flow and heat transfer in a porous medium with the nanoparticles shape effect. The effect of thermal conductivity variation, slip condition and heat generation is also considered. The Sphere (spherical) and Lamina (non-spherical) shapes of Al<sub>2</sub>O<sub>3</sub> and Cu nanoparticle are suspended in pure water to form hybrid nanofluid. The partial differential equations (PDEs) of motion are converted into ordinary differential equation (ODEs) by well-known similarity transformation. The resultant ordinary differential equation (ODEs) are solved analytically with the help of Homotopy analysis method (HAM). Furthermore, the effects of physical parameters on velocity profiles, temperature profiles and Nusselt number are also taken into consideration. It is found that the performance of the Lamina (non-spherical) shapes nanoparticles on temperature disturbance and heat transfer is better than Sphere (spherical) shape nanoparticles. Keywords: Nanoparticle shape, Nanofluid, Magnetic field, Homotopy analysis method.

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