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Influences of nanoparticles with various shapes on MHD flow inside wavy porous space in appearance of radiation

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Highlights

- CVFEM modeling of nanofluid MHD flow was investigated.
- Non-Darcy regime was utilized to employ porous terms.
- *Nu* declines with rise of *Ha*.
- As *Da* augments, heat transfer improves.

Abstract

In this exploration, to control the convection of alumina nanofluid, Lorentz forces was incorporated and porous region was modeled via non-Darcy approach. In governing formulas, radiation impact was involved and nanoparticles shape for estimating behavior of nanomaterial was considered. Roles of magnetic, radiation parameters, Rayleigh number and nanoparticles' shape were illustrated via CVFEM. Outputs proved that imposing magnetic field augments the temperature profile and the Nu_{ave} augments meaningfully with Rayleigh and Darcy number as well as nanoparticle shape factor; however magnetic field has reverse effect on it.