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M. Sheikholeslami, Houman B. Rokni



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**CVFEM for effect of Lorentz forces on nanofluid flow in a porous complex  
shaped enclosure by means of Non-equilibrium model**

M. Sheikholeslami <sup>1,a</sup>, Houman B. Rokni <sup>b</sup>

<sup>a</sup> *Department of Mechanical Engineering, Babol Noshirvani University of  
Technology, Babol, Iran*

<sup>b</sup> *Department of Mechanical and Materials Engineering, Tennessee Technological  
University, Cookeville, TN 38505, USA*

**Abstract**

Influence of magnetic field on nanofluid transportation inside a porous cavity by means of two-temperature model is reported via Control volume based finite element method (CVFEM). Nanofluid properties are estimated by means of KKL. Boussinesq-Darcy estimation is employed for momentum equations. Roles of Rayleigh number ( $Ra$ ), solid-nanofluid interface heat transfer parameter ( $Nhs$ ), porosity ( $\varepsilon$ ) and Hartmann number ( $Ha$ ) are depicted. Results show that porosity has opposite relationship with temperature gradient. Nusselt number reduces with augment of  $Nhs$ .

**Keywords:** Porous media; Thermal non-equilibrium; Nanofluid; Natural convection; Magnetic field; CVFEM; KKL.

**Nomenclature**

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<sup>1</sup> Corresponding author:

Email address: [mohsen.sheikholeslami@nit.ac.ir](mailto:mohsen.sheikholeslami@nit.ac.ir), [m.sheikholeslami1367@gmail.com](mailto:m.sheikholeslami1367@gmail.com) (M. Sheikholeslami), [houman.b.rokni@gmail.com](mailto:houman.b.rokni@gmail.com) (Houman B. Rokni)

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