

Special Issue on  
**Electrohydrodynamic and Magnetohydrodynamic  
Nanofluid Flow and Heat Transfer**

# CALL FOR PAPERS

Nanofluids are a new class of heat transfer fluid containing nanoparticles in the size range under 100 nm that are uniformly and stably suspended in a liquid. Energy transportation of the nanofluid is affected by the properties and dimension of nanoparticles as well as the solid volume fraction. Compared with base fluids, a number of recent experiments have indicated dramatic improvements in effective static thermal conductivity. In numerical studies two methods are used for simulation of nanofluid hydrothermal behavior: single-phase model and two-phase model.

The convection and heat transfer enhancement technique utilizing an electric field or electrostatic force generated from polarization of the dielectric fluid can be one of the most promising methods among various active techniques because of its several advantages, for example, simplified implementation using only a transformer and electrodes and small consumption of electric power. This technique is frequently called the electrohydrodynamic (EHD) method of heat transfer, which refers to the interdisciplinary field and deals with subjects concerning the interactions between electric field, flow field, and temperature field.

Study of magnetic field effects has attracted many attentions in engineering sciences due to its wide applications such as in the polymer industry and metallurgy where hydromagnetic techniques are being used. To be more specific, it may be pointed out that many metal surgical processes involve the cooling of continuous strips or filaments by drawing them through a quiescent fluid and that, in the process of drawing, these strips are sometimes stretched. Magnetic field can be variable with time or space. A ferrofluid behaves as a fluid that is affected by an external magnetic field and externally applied magnetic fields can be used to control and direct the flow of ferrofluids, because of which it is applicable in various fields such as electronic packing, mechanical engineering, thermal engineering, and aerospace. In various applications such as free convection heat transfer, applying magnetic field can reduce the heat transfer rate. But in various applications such as cooling of electric device, increasing rate of heat transfer is a goal. So, using nanofluid in such application can be useful. Ferrofluid is a magnetic nanofluid which can be influenced by magnetic and electric field.

Potential topics include but are not limited to the following:

- ▶ Nanofluid flow and heat transfer
- ▶ Ferrofluid flow and heat transfer
- ▶ Magnetohydrodynamic nanofluid
- ▶ Electrohydrodynamic nanofluid
- ▶ Heat transfer modeling in nanofluid
- ▶ Fluid flow modeling
- ▶ Numerical methods in nanofluid
- ▶ Synthesis of nanofluids applications (e.g., smart coolants and photonic crystals)

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/jnt/emnf/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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