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EXPERIMENTAL INVESTIGATION OF NATURAL CONVECTION HEAT TRANSFER OF Fe_3O_4/ ETHYLENE GLYCOL NANOFLUID UNDER MAGNETIC FIELD

Navid Naseri Boroujeni, Nasrin Etesami and Mohsen Nasr Esfahany
Department of Chemical Engineering
Isfahan University of Technology
Isfahan 84156-83111, Iran

SAMMARY: In this work natural convection heat transfer of Fe_3O_4/Ethylene Glycol nanofluid around a horizontal heated wire in the presence of vertical magnetic field is studied experimentally. The effects of the external magnetic field strength and its orientation on natural convection heat transfer of the magnetic nanofluid are analyzed. The experimental results show that the external magnetic field is a vital factor that affects the convective heat transfer performances of the magnetic fluids. The results show that the natural convection coefficient of magnetic fluid under magnetic field increases with volume concentration of nanoparticle up to 0.015%. The natural convection coefficient decreases with increasing in strength of magnetic field in both directions.