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Mixed Convective Heat Transfer in Water-Based Al2O3 Nanofluid in Horizontal Rectangular Duct

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Abstract : In the present study, mixed convection in a horizontal rectangular duct using Al2O3 is numerically investigated. The effects of different Rayleigh number, Reynolds number and radiation on flow and heat transfer characteristics were studied in detail. This study covers Rayleigh number in the range of $2\times106\leq Ra\leq2\times107$ and Reynolds number in the range of $100\leq Re\leq1100$. Results reveal that the Nusselt number increases as Reynolds and Rayleigh numbers increase. It was also found that the dimensionless temperature distribution increases as Rayleigh number increases.

Keywords : numerical simulation, mixed convection, horizontal rectangular duct, nanofluids
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