

New Effect of Duct Cross Sectional Shape on the Nanofluid Flow Heat Transfer

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Abstract : In the present article, we investigate experimental laminar forced convective heat transfer specifications of TiO₂/water nanofluids through conduits with different cross sections. we check the effects of different parameters such as cross sectional shape, Reynolds number and concentration of nanoparticles in stable suspension on increasing convective heat transfer by designing and assembling of an experimental apparatus. The results demonstrate adding a little amount of nanoparticles to the base fluid, improves heat transfer behavior in conduits. Moreover, conduit with circular cross-section has better performance compared to the square and triangular cross sections. However, conduits with square and triangular cross sections have more relative heat transfer enhancement than conduit with circular cross section.

Keywords : nano fluid, cross-sectional shape, TiO₂, convection

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