## Abstract

This paper investigates experimentally the effects of laminar nanofluid flow over the microscale backward-facing step (MBFS) and forward-facing step (MFFS) on the heat transfer characteristics. The experiments were implemented on MBFS and MFFS with a step height of 600 μm. Both MBFS and MFFS have the upstream and downstream lengths of 0.1 m and 0.15 m respectively. The Reynolds number ranged of 280–480. The concentrations of SiO2 nanoparticle valued at 0.005 and 0.01 with a diameter of 30 nm were immersed in a distilled water. The experimental results revealed that the concentration of 0.01 water–SiO2 nanofluid recorded the highest Nusselt number. The comparison between MBFS and MFFS revealed that the highest Nusselt number is obtained through the use of the MFFS, which is approximately twice that of MBFS. However, the friction factor recorded a higher value for MFFS. The experimental results were in a good agreement with the numerical published results.