

In this study, thermal-hydraulic performance of a confined slot jet impingement with Al₂O₃-water nanofluid has been numerically investigated over Reynolds number ranges of 100-1000. Two triangular ribs are mounted at a heated target wall; one rib located on the right side of the stagnation point and another one located on left side of the stagnation point. The governing momentum, continuity and energy equations in the body-fitted coordinates terms are solved using the finite volume method and determined iteratively based on SIMPLE algorithm. In this study, effects of Reynolds number, rib height and rib location on the thermal and flow characteristics have been displayed and discussed. Numerical results show an increase in the average Nusselt number and pressure drop when Reynolds number and rib height increases. In addition, the pressure drop and average Nusselt number increases with decrease the space between the stagnation point and rib. The maximum enhancement of the average Nusselt number is up to 39 % at Reynolds number of 1000, the rib height of 0.3, rib location of 2 and nanoparticles volume fraction of 4%. The best thermal-hydraulic performance of the impinging jet can be obtained when the rib height of 0.2 and rib location of 2 from the stagnation point with 4% nanoparticles volume fraction.