

Heat Transfer Analysis through Branched Structure Microchannel Heat Exchanger

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Heat Exchanger is a key component in cooling systems. The introduction of microchannel heat exchangers has revolutionized the cooling technology which lead to miniaturization of devices to a great extent. Due to their compactness they are mainly used in electronic cooling; in recent times their application is extended to medical field for heating blood and cooling for scanning equipment. Microchannel heat exchangers have high heat transfer coefficient due to small channel size, however this causes high pressure drop. Experimental studies have shown that thermal efficiency of branched structure is comparatively higher than that of parallel microchannel. Present study focuses on heat transfer analysis carried of single phase gas flow through branched microchannel for size ranging from 20 μm to few hundred μm , also at different branch angles to determine the optimum design parameters. The analysis is carried out using computational software like OpenFOAM.