THE MICRO-SCALE HEAT TRANSFER

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ABSTRACT

The actual trend in miniaturization of thermal systems implies new theoretical and experimental researches on meso – micro – nano scales behavior of actual well-known macro-scale thermal processes. The main researches envisions the micro heat exchangers and chemical reactors (theoretical and experimental approaches on micro-scale heat and fluid flow), and the low cost based technologies in manufacturing of micro devices. The demonstrated results in the flow with heat transfer are at this moment contradictory. Within this paper it tries to sketch the influence of miniaturization upon the irreversibility through heat and fluid flow inside miniaturized channels. The procedure involves actual well-known macro-scale heat transfer and pressure drops equations because there is a real lack of reliable information. In order to perform a complete thermodynamic analysis, it was applied the thermodynamic mathematical judgment to the case of heat exchanger passage entropy generation.

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