

传递现象

一种协同式强化表面的换热特性

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摘要 根据场协同理论发展了一种新型强化换热表面,对其紊流流动和换热特性进行了实验测定,考察了翅片倾角、通道高度和Reynolds数的影响,并且在相同泵功条件下进行了强化效果评价。结果表明,在翅片倾角 $\beta=0\sim 23.2^\circ$ 范围内,强化效果随翅片倾角单调增加,但是随Re的增大而单调减小。对于一定的翅片倾角,通道高度大者呈现较好的低功耗、高换热率特性。

关键词 [场协同](#); [强化传热](#); [折流翅片](#)

分类号

Characteristics of heat transfer in a synergetic rectangular channel

Abstract

An enhancement surface of heat transfer has been developed based on the field synergy principle. The characteristic of the turbulent heat transfer and flow was studied experimentally. Effects of the fin angle, the channel height, and the Reynolds number have been evaluated. The assessment under the constraint of the identical pump power consumption reveals that the in the fin angle range of $\beta=0-23.2^\circ$ the enhancement ratio increases monotonically with β , but decreases with the Reynolds number. For a fixed fin angle, thick ducts show better feature of lower power consumption and higher heat transfer.

Key words [field synergy](#) [heat transfer enhancement](#) [flow-inclining fin](#)

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