All Sciences Proceedings
http://as-proceeding.com/

AS-ABSTRACTS
https://as-proceeding.com/index.php/as-abstracts
ISSN: 2980-1834

All Sciences Abstracts,
Volume 1, pp 15, 4, 2023

Heat and mass transfer efficiency in the T-Shaped geometry: Entropy generation analysis

A. Mahammedi[1], T. T. Naas [2], and K. Rahmani[1]

[1] *Department of Mechanical engineering, University of Djelfa, 17000 Djelfa, Algeria.*
[2]*Renewable Energy Systems Applications Laboratory (LASER), Faculty of Science and Technology, Ziane Achour University, Djelfa 17000, Algeria*

Abstract **–** Thermodynamic analysis of energy efficiency, especially those utilizing the second law of thermodynamics, is focus of scientific inquiry, particularly given the interest in the efficient use of heated energy sources. In this work, we characterize the geometry in terms of entropy generation witch due to the heat transfer and fluid friction as function of generalized Reynolds number under the effects of different inlet temperatures.

This work has been performed for the important parameters in the following ranges: generalized Reynolds number (Re_g = 1 to 60). As generalized Reynolds number increases, the entropy generation due to heat transfers decreases, which reveal that the effect of the generalized Reynolds number on heat transfer performance is substantial. These results verify that the T-shaped channel can effectively enhance the heat transfer performance for all cases. Overall, the entropy generation and synergy angle are significant characteristics to consider when building micromixers for thermal efficiency and miscible fluid mixing.

Keywords – Heat Transfer, Mass Transfer, T-Shaped Channel, Entropy Generation, Computational Fluid Dynamic.