

## COMPUTATIONAL MODELING OF CONVECTION ENHANCEMENT IN HEAT EXCHANGERS DESIGN

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### PROPOSAL

The enhancement of convective heat transfer is an everlasting subject due to its strong connection to many technical applications such as design of heat-dissipators utilised in electronics [1], heat recovery in energy intensive industries [1], equipment optimisation in various fields including, for example, air conditioning [2] and food processing [3].

Innovative techniques for the enhancement of forced convection in heat exchangers and heat dissipating equipments encompass the optimal use of passive devices (such as corrugated and interrupted fins, vortex generators and pin-fins), the realisation of active devices propelled by turbulence inducing Micro Electro-Mechanical Systems (MEMS) or else a combination of both active and passive techniques.

Computational modeling is a useful tool, first in the understanding of convection enhancement mechanisms, and second in the design and optimisation of innovative heat exchangers. Numerical modeling in this field is not always an easy task since it usually requires the solution of strongly coupled convection and conduction problems in complex flow situation. Furthermore, in many cases of technical interest convective heat and mass transfer occur simultaneously. Of course, comparisons between experimental and numerical results are of primary importance to validate numerical procedures.

The aim of this mini-symposium is to focus on numerical techniques utilised in modeling of convection enhancement, in order to achieve both a better understanding of the underneath physical mechanisms and to improve the design of innovative equipments.

### REFERENCES

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