

Special Issue

Recent Advances in Conjugate Heat Transfer

Message from the Guest Editors

Progress in different engineering fields, including electronics, power engineering, chemical engineering, and others, demands an organization of digital twin that can optimize the technological process. It should be noted that heat and mass transfer is a major transport phenomenon within various engineering and natural systems. Very often, a detailed description of the energy transport requires the analysis of complex heat transfer, including convection and radiation within the fluid domain and heat conduction within the solid blocks. Such heat transfer can be considered a conjugate heat transfer. This complex heat transfer should be used for the accurate description of cooling systems in electronics, optimization of the heat exchangers, development of the crystal growth systems, optimization of the building thermal insulation, modeling of the building thermal performance, and so on. It should be noted that symmetry analysis can also help to obtain very interesting and useful information about the considered phenomena using conservation laws.

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Deadline for manuscript submissions

closed (30 November 2022)



Symmetry

an Open Access Journal
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Impact Factor 2.2
CiteScore 5.3



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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