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# Nanoscale Heat Transfer Phenomena: Ballisticity, Rectification, Collective Modes, Thermohydrodynamics, Coherence

Guest Editors:

### Message from the Guest Editors

Dr. Termentzidis Konstantinos The thermal transport differs significantly in nanostructures and nanostructured materials compared to their bulk Dr. Giorgia Fugallo state. In the last two decades, both computational and experimental studies have revealed several new Dr. Yangyu Guo phenomena like phonon confinement, blocking/focusing, Dr. F. Xavier Alvarez or coherent, collective thermo-hydrodynamics, as well as rectification effects and new regimes like ballistic or quasiballistic related to like-Levy phonon flights. Observations showed that the Fourier's Law or even the Boltzmann's Deadline for manuscript Transport Equation cannot capture these phenomena, as submissions. closed (15 March 2024) there is a breakdown of the macroscopic well-established heat dissipation theory due to the relative comparison of the phonon mean free paths/coherence length with the characteristic dimensions of the nanostructures and the presence of interfaces and free surfaces.

> This Special Issue in Nanomaterials will attempt to cover the most recent advances in "Nanoscale Heat Transfer Phenomena" and both experimental and theoretical evidences of ballistic transport, rectification, phonon collective modes, Levy phonon flights, and classical thermohydrodynamics.



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### **Editor-in-Chief**

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### Message from the Editor-in-Chief

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