


Editorial Special Issue on Feature Papers of *Thermo* in 2022

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Editorial Note

In this Special Issue of *Thermo*, a collection of 11 papers is presented based on a preselection of the Editor in Chief of the journal for this particular and specific Special Issue called *Feature Papers of Thermo in 2022*.

This Special Issue aimed to cover different topics including: heat and temperature; thermodynamics; calorimeters and calorimetry; thermal properties of matter; heat transfer methods: radiation, conduction, and convection; isolated thermal systems; energy and free energy; phases equilibrium and phase transitions; solubility phenomena; ideal/real heat engines and refrigerators; waste heat recovery; energy storage and saving; thermal exergy analysis and management, etc.

This collection contains not only high-quality reviews but also original papers from leading researchers, discussing new knowledge or new cutting-edge developments of fundamental research and applications dealing with heat and temperature aspects.

More precisely, three excellent reviews papers are published in this Special Issue covering topics from chemical thermodynamics and associated formalisms, as described by R. Battino and T.M. Letcher [1], to the direct applications of thermal science for the development of compressed air energy storage (CAES) technologies, as covered by A.M. Rabi et al. [2], or for biosecurity applications, as suggested by S. Taheri et al. [3]

Original papers highlight novel insights, such as that published by A. Jaffer called “*Natural Convection Heat Transfer from an Isothermal Plate*”, who developed a novel, comprehensive, and exact model to describe natural convection from an external, isothermal, and flat surface for both horizontal upward-facing and vertical downward-facing plates [4]. Other original papers include also other important modeling aspects including:

- The use of the CALPHAD method for the thermodynamic assessment of the presence of nickel in Lead–Bismuth Eutectic (LBE) coolant, studied by P. Samui and R. Agarwal [5];
- The parametrization of the NRTL model in process simulation was studied by L. Fernández et al. [6].
- The use of artificial neural networks to highlight relationship between the design, operational conditions, and performance of ejectors was recommended by M. Bencharif et al. [7].
- A multiscale modeling approach for predicting the nonlinear shrinkage of metal parts during manufacturing by bound metal deposition was proposed by D.G. Luchinsky et al. [8] This article provides deep physical insight into not only the associated mechanisms but also mutual connections between scales by exploring simulation data moving from atomic dynamics to finite element models.

Original papers dealing mainly with experimental data were also selected, including:

- The use of DSC measurements to depict thermal transformations of polymorphic long-chain normal paraffins ($n\text{-C}_{32}\text{H}_{66}$ and $n\text{-C}_{36}\text{H}_{74}$), published by C.M. Earnest et al. [9].
- The use of alkali-halide-based eutectic mixtures as phase-change materials for heat storage applications, as described by A. Redkin et al. [10].



Citation: Jacquemin, J. Editorial Special Issue on Feature Papers of *Thermo* in 2022. *Thermo* **2023**, *3*, 329–330. <https://doi.org/10.3390/thermo3020020>

Received: 2 June 2023

Accepted: 4 June 2023

Published: 7 June 2023



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Lastly, the paper published by I.R. Kennedy et al. [11] provides an intriguing “*New Look at Physico-Chemical Causes of Changing Climate*” by debating the impact of seasonal variation in seawater temperature on the CO₂ partial pressure in the Earth’s atmosphere.

All these topics covered in this Special Issue are of importance and indicate the quality expected of papers to be published in our journal. As the Editor in Chief of the journal, I hope that this compilation improves not only our fundamental understanding of thermal science in general but also opens windows for potential novel applications dealing with heat and temperature aspects. All together, this first edition was a great success, and I look forward to the next edition of the *Feature Papers of Thermo*, which is now open for submission.

The success of a Special Issue is not only based on the quality of the authors and their excellent manuscripts: it is an association of joint efforts of the journal’s Editorial Team, authors, and, reviewers. Many thanks for all your efforts.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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