

What Are the Modern Educational Trends in a More Widely Comprehended Field of Thermodynamics, Thermal Analysis and Applied Thermal Physics?

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The theory of thermal science [1,2], however, has moved a step forward in various areas of application. It can be witnessed in the range of the published books, conferences conveyed and new ideas developed: (1) traditionally the most obscure is an artificial concept of entropy and rather exceptional form of the Second Law of Thermodynamics. (2) Another approach is trying to couple historical caloric, artificially introduced entropy and the modern concept of information. (3) Thermal flow (Fourier Law) can also be associated with a generalized perception of flow in analogy with diffusion (Fick Law) or the flux of electric current (Ohm Law) and a significant reciprocity can be found for the famous Schrödinger equation when taking into account that diffusion process as something fundamental and intimately related to light and matter [3]. (4) There are various implications of the modern theories of non-equilibrium [6] phenomena [3] (kinetic phase diagrams [4]). (5) Worth of noting is a recent exceptional approach, which presents a consistent and well completed theory of ecosystems based on extended thermodynamic concepts including the interpretation of the First and the Second Law within biological systems functioning far from equilibrium. (6) The oscillatory processes, which we often face in everyday nature (Liesegang's rings, shells ribs, tree rings or Belousov–Zhabotinsky reactions) are a particular case of Brownian motion when accounting on the fact that the Brownian and quantum movements [1,2,5] are indistinguishable by intermitted measurements in the configuration space so that the class of self-organized periodic reactions are characterized by the Planck quantum constant, $\hbar$. (7) The last domain is the applied field of economy and sociology giving the rise of new field called econophysics [2]. This study was supported by grant No A100100639 of the Grant Agency of the Czech Academy of Sciences and the project 4977751303 by the Ministry of Education (MSMT).

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