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Applications of Statistical Thermodynamics

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Message from the Guest Editor

Statistical thermodynamics span the bridge between the visible macroscopic world and the invisible atomistic world to evaluate values of atomistic interaction parameters with unambiguous physical significance from measured values of state parameters, such as temperature, pressure and chemical composition under equilibrium state. Unlike conventional thermodynamics, in which entropy, enthalpy, and free energy are defined mathematically in terms of state parameters and thus applicable universally to any system, even without knowing exactly the nature of compound under consideration, statistical thermodynamic analysis must be started from unambiguous a priori modeling of compounds under consideration. When an unrealistic model is chosen at the onset of the statistical thermodynamic approach, the evaluated parameters are without valid physical significance. The Guest Editor wishes this Special Issue will attract the attention of authors who have been working on entropy and enthalpy aspects of materials science, as well as physicists and chemists using statistical thermodynamics as an analysis tool.



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Special Issue



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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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