Special Issue

Generalized Statistical Thermodynamics II

Message from the Guest Editors

Population balances deal with the evolution of a distributed property, trait, or other characteristic over the members of a population. Numerous examples are covered under this generic description, from colloidal particles and cells at the microscale, to plants and animals at the macroscale, to stars and galaxies at astronomical scales. Stochastic population balances model the evolution of the population as a stochastic process that considers all possible transitions of state at any given moment. This Special Issue invites papers that apply the tools and formalism of statistical mechanics to the evolution of stochastic populations. Areas of special interest include clustering and fragmentation in particulate systems, propagation and extinction of epidemics, statistical thermodynamics of networks, evolution of biological populations, and generally problems that view the evolution of populations as a random walk in the event space of possible states.

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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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