**Editor's Comment:**

I have reviewed this paper and find it to be both competent and cogent. It is linguistically and semantically correct. I have some comments that you are welcome to pass on to the authors.

- One of the presumptions upon which this paper's discussion is based is the notion that an aggregation of atoms/ molecules can be characterized in terms of 'N particles', where the assumed average energy can be precisely described. The authors are correct in their observation that one of primary assumptions which is relied on to support the dictates of the laws of thermodynamics – namely that actual energy densities can be calculated as a function of volume being constant despite the effects of temperature and pressure – has another dimension that is not discussed here. Every complex, open system exhibits characteristics which are defined and governed by the rules of self-organizing criticality. This why so many impeccably documented phenomenological events cannot be accommodated by the laws of thermodynamics as presently comprised.

- The energy density of a gas cannot be accurately estimated according to the equations intrinsic to current theory. For example, according to the ideal gas law equation, the energy density of 23.8 liters of oxy-hydrogen gas (created by electrolyzing water under controlled conditions) is equal to one CC of 87 octane gasoline (summer blend). Independently validated experimental trials demonstrate that the actual energy density of oxy-hydrogen gas is more than 10 X greater than the values predicted by the ideal gas formula employed in this paper. This anomaly begs clarification if the conclusions described in this paper are to be credited.

I am recommending that this paper be published in your journal but suggest that the authors could produce genuinely seminal work by integrating the current composition of the laws of thermodynamics with the rules governing self-organizing criticality in open, complex systems. As far as I am aware, no one except perhaps Per Bak and his colleagues at Brookhaven National Labs, have carefully explored this avenue of investigation.

**Editor's Details:**

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