

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/263978328>

# Response to “The Misinterpretation of Entropy as ‘Disorder’”

ARTICLE *in* JOURNAL OF CHEMICAL EDUCATION · JANUARY 2012

Impact Factor: 1.11 · DOI: 10.1021/ed2006295

---

READS

31

1 AUTHOR:



[Arie Ben-Naim](#)

Hebrew University of Jerusalem

72 PUBLICATIONS 1,281 CITATIONS

SEE PROFILE

## Response to “The Misinterpretation of Entropy as ‘Disorder’”

Arieh Y. Ben-Naim\*

Department of Physical Chemistry, The Hebrew University of Jerusalem, Edward J. Safra Campus, Givat Ram, 91904, Jerusalem, Israel

**ABSTRACT:** The author of the article “Entropy: Order or Information” (DOI: 10.1021/ed100922x) responds to Frank L. Lambert’s letter (DOI: 10.1021/ed2002708).

**KEYWORDS:** First-Year Undergraduate/General, Upper-Division Undergraduate, Physical Chemistry, Misconceptions/Discrepant Events, Thermodynamics

In my opinion, this letter<sup>1</sup> does not add anything new that was not already published by Lambert. I do not agree with Lambert’s suggestion that I should have added a comment about the “energy-based thermodynamic view of entropy”. What I have said in my article is correct, in particular, my conclusion that the change in entropy in all the processes discussed in my article are independent of temperature, as well as independent of the energy of the system, and that there is no change in the velocity or momentum distribution involved in these processes. It is puzzling to me that Lambert admits his error in his ref 4: “I especially appreciate Professor Ben-Naim’s personal correction of my misstatement on p 1386 that “R embeds temperature in Boltzmann’s entropy”. He wrote me that “R simply provides the dimensions of temperature; it does not *embed* temperature”.<sup>1</sup> Yet Lambert still insists that the entropy change in the expansion of ideal gas is dependent on temperature.

For more details on my opinion on this matter, readers are referred to my new book on the subject.<sup>2</sup>

### ■ AUTHOR INFORMATION

#### Corresponding Author

\*E-mail: arieh@fh.huji.ac.il.

### ■ REFERENCES

- (1) Lambert, F. L. The Misinterpretation of Entropy as “Disorder”. *J. Chem. Educ.* **2012**, 89; DOI: 10.1021/ed2002708.
- (2) Ben-Naim, A. Entropy and the Second Law, Interpretation and Misinterpretationss; World Scientific: Singapore, 2012.

Published: January 17, 2012