

Energy and Entropy

A Dynamic Duo

Harvey S. Leff

Energy is typically regarded as understandable despite its multiple forms of storage and transfer. Yet entropy is an enigma, in part because of the common view that it represents disorder. That view is flawed and hides entropy's connection with energy. In fact, macroscopic matter stores internal energy, and that matter's entropy is determined by how the energy is stored. Energy and entropy are intimately linked.

KEY FEATURES

- Qualitative demonstration that entropy is linked to spatial and temporal energy spreading, with equilibrium corresponding to the most equitable distribution of energy, which corresponds to maximum entropy
- Analysis of energy and entropy of matter and photons, with examples ranging from rubber bands, cryogenic cooling, and incandescent lamps to Hawking radiation of black holes
- Unique coverage of numerical entropy, the 3rd law of thermodynamics, entropic force, dimensionless entropy, free energy, and fluctuations, from Maxwell's demon to Brownian ratchets, plus attempts to violate the second law of thermodynamics

SELECTED CONTENTS

1. Energy is Universal.
2. Energy is Not Enough.
3. Entropy: Energy's Needed Partner.
4. Gases, Solids, and Polymers.
5. Radiation and Photons.
6. Numerical Entropy.
7. Language and Philosophy of Thermodynamics.
8. Working, Heating, and Cooling.
9. Sanctity of the 2nd law of Thermodynamics.
10. Reflections and Extensions.
11. Appendices: Mathematical Identities.

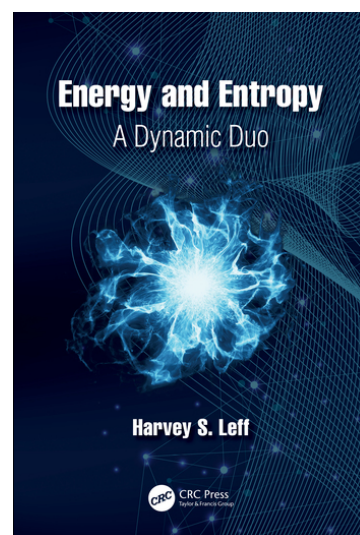
SAVE 20% on paperback
when you order online with Promo Code **FMQ13**

ISBN: 978-0-3673-4906-6

List Price: \$54.95 / £42.99

Price with Promo Code FMQ13: \$43.96 / £34.39

FREE standard shipping when you order online



Catalog no. 312202
August 2020, 328 pp.
ISBN: 978-0-3673-5141-0
\$140.00 Hardback
(No discount)

www.crcpress.com

e-mail: orders@crcpress.com

1-800-634-7064 • 1-561-994-0555 • +44 (0) 1235 400 524



CRC Press
Taylor & Francis Group