



entropy



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## Entropy Based Fatigue, Fracture, Failure Prediction and Structural Health Monitoring

Guest Editor:

**Prof. Dr. Cemal Basaran**

Department of Civil, Structural and Environmental Engineering,  
University at Buffalo, Buffalo, NY  
14260-4300, USA

Deadline for manuscript  
submissions:

**closed (30 June 2020)**

### Message from the Guest Editor

Using either thermodynamic entropy or information theory entropy has been shown to be extremely successful in predicting the degradation, fracture, fatigue, and in-situ prognosis of all systems. It was proven by Jaynes [1957] that thermodynamic entropy is identical to the information theory entropy of the probability distribution, except for the presence of Boltzmann's constant. Information-theory entropy has been used successfully for fault diagnostics and prognostics of systems for in-situ structural health monitoring using various real-time signal feed-back cycles and computations. There is even a new pyroelectric sensor entropy detector to monitor energy conversion process in real time. There is a strong worldwide consensus among leading researchers that using entropy is scientifically the most accurate and reliable method for predicting degradation, fatigue, fracture, failure mechanics, and in-situ structural health monitoring of all systems. This Special Issue of the *Entropy* is devoted to covering the most recent advances in using entropy damage mechanics, and the structural health monitoring [fault diagnostics] of all systems.



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Special Issue



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## Editor-in-Chief

### Prof. Dr. Kevin H. Knuth

Department of Physics, University  
at Albany, 1400 Washington  
Avenue, Albany, NY 12222, USA

## 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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Entropy Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland

Tel: +41 61 683 77 34  
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