Special Issue

Fracture Analysis of Materials Based on Fractal Nature

Message from the Guest Editors

It has been observed that the fracture surface of metals, rock, concrete, and many other disordered or heterogeneous materials can be described by fractals characterized by random self-similarity. Furthermore, it can be explained that the behavior of a material depends on its microstructural disorder and its relation to its size at the macro scale. The microstructural disorder is a scale-independent material property less important when increasing the structural size. From a fractal point of view, this represents the change from a non-integer dimension to an integer dimension, that is, Euclidean space.

This Special Issue focuses on topics related to the fractal approach to the fracture analysis of materials using experimental testing, numerical simulation, and structural health monitoring. Topics that are invited (but are not limited to) the following:

- Size effect based on the fractal theory;
- Fractal analysis and its applications in fracture mechanics;
- Applications of fractal approaches to fracture failure and damage of materials under different loading conditions;
- Fractal/multi-fractal analysis for structural health monitoring.

Guest Editors

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Deadline for manuscript submissions

closed (25 March 2025)

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About the Journal

Message from the Editor-in-Chief

Fractal and Fractional (*Fractal Fract.*) is a scholarly online journal which provides a forum for discussion on new original models and methods in fractals and fractional calculus both from theory and applications. It is a peer-reviewed, open access journal that publishes high quality original research articles, review papers and short communications.

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 19.3 days after submission; acceptance to publication is undertaken in 2.8 days (median values for papers published in this journal in the second half of 2025).