

Special Issue on

**Artificial Intelligence Applications in Sustainable Material Analysis and Design 2023**

## CALL FOR PAPERS

The civil engineering industry depends on the development of modern construction materials to suit the rising demand for high strength materials. Much research has been undertaken across the globe to develop innovative materials, but there is still scope for further development. Additionally, advances in computing technology have helped many researchers move towards the utilization of computer-based techniques, including soft computing applications, to develop modern materials.

Many materials that have been used for centuries have undergone drastic changes in their composition, structure, and use, including concrete. Today, it is becoming difficult to find natural resources for concrete production. Utilizing waste materials not only helps in producing concrete, cement, and other construction materials, but also has various secondary advantages, for example, saving energy, decreasing landfill costs, and reducing pollution. This requires modern tools and techniques, as using conventional methods is not sustainable. Numerous methods have been trialed by researchers to develop innovative materials using computing techniques such as deep learning. Machine learning helps in evaluating, understanding, and predicting attributes that dictate the strength of the material. Consequentially, this work is becoming interdisciplinary, involving both machine learning experts and sustainable material development researchers.

The aim of this Special Issue is to serve as a platform for the dissemination of research related to applications of artificial intelligence (AI) in the development and testing of sustainable materials, and to encourage cross-disciplinary research working to achieve these materials. We welcome both original research and review articles.

Potential topics include but are not limited to the following:

- ▶ Applications of artificial neural networks (ANNs) in concrete evaluation and design
- ▶ Mathematical modelling of sustainable construction materials
- ▶ Recent trends in sustainable construction material design and development
- ▶ Deep learning-based models for materials development
- ▶ Sustainable materials for smart cities
- ▶ Modern algorithms for sustainable material development
- ▶ Meta heuristic-based techniques for construction material innovation
- ▶ Applications of soft computing in civil engineering material development
- ▶ Soft computing-based techniques for the testing of engineering materials
- ▶ Mathematical modelling applications in material characterization
- ▶ AI-based applications in waste material utilization for construction material development
- ▶ Scientometric applications in sustainable material development

Authors can submit their manuscripts through the Manuscript Tracking System at <https://review.wiley.com/submit?specialIssue=916832>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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