Mechanics & Industry
An International Journal on Mechanical Sciences and Engineering Applications

Call for Papers

Themed Issue on

History of matter: from its raw state to its end of life

Edited by:

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Background

The metallic, plastic or composite material undergoes a life cycle in which different situations require that we control the mechanical or rheological response under severe solicitations.

One of the most upstream stages is that of the manufacturing processes where the material undergoes large irreversible deformations. This is the case for conventional processes but also for advanced manufacturing processes found in the context of the factory of the future.

The product thus obtained is then integrated into simple or complex mechanisms possibly involving multi-material assemblies. This integration can even take place in the human body like biomechanics or even in civil engineering type structures.

It is then very important to control the response of the products in operation under normal or extreme stress conditions. These stresses can be distributed or localized as encountered in tribology problems. They can be static or dynamic, hence the interest of vibration studies. They can lead to our products being damaged or broken. Numerical modeling studies and experimental field measurement techniques are complementary tools that allow us to anticipate before any accidents occur.

Numerical or experimental, this modeling is all the more complex when the material is non-homogeneous. This is the case for granular materials or composites with fibrous reinforcements. The use of multi-scale approaches is therefore essential for reliable modelling.

Finally, before talking about end of life cycle, we have to be able to predict it. The question of durability is fundamental, especially for materials undergoing repetitive cycles inducing fatigue. These predictions are often non-deterministic and are generally made with a certain reliability.

Aims and Scope of the Themed Issue

This special issue aims to bring together the most significant contributions of the last CFM 2022 in line with this history of matter. Various aspects of the life cycle will be considered.

The general objective is to cover several scientific disciplines ranging from manufacturing to sustainability. We will consider in this special issue especially:

- Developments related to the manufacturing processes,
- Progress concerning biomechanics, civil engineering, and multi-material assemblies,
- Contributions in numerical modelling as well as experimental characterization,
- Characterization of heterogeneous material such as granular materials or composites.
- Results of damage studies including dynamics, fatigue, reliability and durability.

Your work presented at the last CFM 2022 was a scene in the history of matter and a remarkable moment in its trajectory.

Your contribution has been selected for a potential article in the journal Mechanics & Industry.

You are then cordially invited to submit your article to the special issue entitled 'History of matter: from its raw state to its end of life'. It will be subject to an evaluation process.

Submissions

All relevant papers will be carefully considered, peer-reviewed by a distinguished team of international experts. The instructions for authors are detailed at: https://www.mechanics-industry.org/author-information/instructions-for-authors

Authors are invited to submit, as soon as their manuscript is ready, online at:
https://articlestatus.edpsciences.org/is/mi/home.php
and choose, during the submission, the special issue: **'History of matter: from its raw state to its end of life'**

Submission deadline – December 23th, 2022

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2. *For authors who cannot benefit from the above agreement, but were invited by the editor in relationship to the 2022 CFM conference, the APC will be taken in charge by the French Association of Mechanics (AFM). For papers belonging to this case, the authors are kindly invited to acknowledge AFM in a section 'Funding' at the end of the paper (before the References).*

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