

Textiles: Multidisciplinary Open Access Journal in Research and Innovation of Textiles

Philippe Boisse 

INSA-Lyon, LaMCoS CNRS, Université de Lyon, F-69621 Lyon, France; philippe.boisse@insa-lyon.fr

The *Textiles* journal is a peer-reviewed, open-access journal. It concerns research and innovation in the field of textile materials. This field is very broad and covers many topics. Textile materials composed of fibers linked by weaving, braiding, knitting, or sewing constitute a wide range of materials and are essential for many applications. They both are ancestral materials used since antiquity and are used for advanced applications, such as composites in aeronautics or the medical industry. The fibrous composition of textiles gives them a very particular behavior. The bending stiffness is greatly reduced compared with that of continuous materials, making applications, such as garments or inflatable structures, possible. This also allows the draping of preforms and prepreg composites. A large number of fibers of very different natures and properties can be used in textiles, from natural or synthetic fibers for clothing to high-performance fibers for composite structures or textile architectures. This wide choice is well adapted to the achievement of sustainable textiles. Yarns or fibers with sensor functions can be incorporated to obtain smart textiles. There are many methods of manufacturing textiles from fibers and yarns. Weaving is the most classical method. Its extensions are numerous, especially for the weaving of 3D textiles. Braiding and knitting are production methods that are improved through automation and computerization. Sewing and stitching make it possible to manufacture noncrimp fabrics.

Textiles, an open-access international journal by MDPI (Basel, Switzerland), focuses on the broad field of textile materials and topics including, but not limited to the following:

Fibers and yarns for textiles, properties, and microstructures: Natural fibers enable plants and animals to withstand the constraints of their environment. These natural fibers and more recently synthetic fibers are used to make textiles. The properties of these fibers, in particular their mechanical and thermal properties, are excellent for certain fibers. The analysis of these properties and their relation to their manufacture, their microstructures, and their use in textiles is one of the topics of the textile journal with, in particular, the case of natural fibers used in textiles.

Advances in weaving, braiding, and knitting technologies: Textile manufacturing methods are numerous and sophisticated. Weaving is a classical method, but it is constantly and significantly being improved. Braiding and knitting are production methods that are improved through automation and computerization. The internal structure and quality of textiles depend on the manufacturing process. Simulations of these processes are currently being developed.

3D textiles: 3D textiles are an important class of advanced engineering materials containing fibers in plane and in thickness. In particular, they are used in composite materials to overcome some delamination and low tolerance to impact damage.

Nonwovens: Nonwoven can be defined as a sheet or web of directionally or randomly oriented fibers bonded by friction and entangling. The applications are numerous, especially in the field of filtration.

Structure and properties of high-performance textiles: The structure and properties of fibers and textiles are linked. It is important to know these properties especially for high-performance textiles and to know the relationship between the structure and the properties.



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Characterization and testing of textiles: The characterization of the properties of textiles is important to define their conditions of use. The simulation of textiles also requires their physical characteristics. The methods of physical and chemical testing are numerous and are regularly improved. In particular, X-ray tomography makes it possible to know the internal geometry of textile materials.

Fatigue, damage, and failure of textile: In order to define the strength of a structure, the analysis of damage and failure, especially fatigue failure, is an important area of solid mechanics. Damage and fracture of structures is specific due to their fibrous composition.

Friction in textile materials: Friction is a major phenomenon in textile materials. Textiles consist of fibers and yarns that are in contact with friction. These condition in a major way the behavior of the textile. Measurement methods and patterns are often specific to textile materials.

Simulation in textile: Mathematical modeling and numerical simulation can significantly improve the efficiency of the design and manufacture of textile materials and structures. Simulation methods are developed concerning textiles in use and manufacturing.

Textile and clothing science: Creative designs in the apparel industry need to be translated into manufacturing data. Work needs to be done to bridge the gap between design and manufacturing, which is evolving with the latest technologies.

Sustainable fibers and textiles: Sustainability has become a major issue when designing a structure and choosing a material. There is a lot of development going on today to make the textile industry become a sustainable one. Production of natural fibers, moderate water consumption, sustainable chemical treatments, and low-energy care are among the many research topics concerning this subject.

Recycling in textiles: The amount of waste generated by textiles and their production is very important. The recycling rate of textiles is relatively low and needs to be improved. It is necessary that most of this waste be recycled instead of being disposed of. This is an important issue in the field of textiles.

Fashion and apparel design: Designing clothing for the fashion industry requires technical and artistic creativity. Clothing designers must conceptualize, create, and control the manufacturing of textile garments.

Textile composite: Many of the high-performance composites include textile reinforcements. These provide the high mechanical characteristics of continuous fibers, such as carbon, aramid, or glass fibers. More recently, textiles made of biosourced fibers are also used in composites.

Preform and prepreg draping: The manufacturing of textile composites often involves a draping operation of the fibrous reinforcement on a 3D surface with double curvature. The operation is complex and requires significant in-plane shear strains. Wrinkles frequently appear. Simulation methods can be used to determine the optimal conditions for this draping.

Medical textile materials: Medical textile materials concern implant and nonimplant materials and extra-body systems. Their development is fast. This is a technically sophisticated and emerging multidisciplinary field.

Textile materials for civil engineering applications: Different methods have been developed to replace steel reinforcement in concrete structures with fibers and textiles. Textile composite materials are also used to reinforce civil engineering structures or to repair them after an earthquake or an accident.

Geotextiles: Geotextiles are used for reinforcement, damping, drainage, filtration, and soil separation. These textiles provide solutions for civil soil engineering, thanks to their advanced physical properties.

Smart textiles: Smart textiles, passive and active, are capable of detecting and reacting to external stimuli. Their applications concern, in particular, the fields of transport, energy, medicine, and security.

Protective and thermal protective textiles: Textiles and clothing are used to provide protection against various external aggressions. Thermal protective cloths are manufac-

tured to protect firefighters. Ballistic and impact protections are also an important field of application for textiles.

Textile history and archeology: Textiles have been made and used since antiquity. Their history is a rich subject of research.

On behalf of the entire Editorial Board, I invite you to submit your exciting research to *Textiles*, and I look forward to contributions from all textile-related fields. I wish a great success of *Textiles*.

Conflicts of Interest: The author declares no conflict of interest.

Short Biography of Author



Philippe Boisse is a Professor of Mechanical Engineering at Université de Lyon, France. He obtained his PhD at University Paris 6. His fields of research are Composite forming, Textile composites, Mechanics of fibrous/textile materials, Finite element simulations for textile forming processes and thermoforming of thermoplastic composites. He is currently President of the French Association for Composites Materials (AMAC). He is the director of the GDR (Group of Research) CNRS on composite manufacturing. P. Boisse is Associated Editor of the International Journal of Material Forming (Springer). He is a member of the 'Institut Universitaire de France' (IUF).