

NANOCELLULOSE: A MATERIAL OF THE FUTURE FOR A SUSTAINABLE WORLD.

Last year at the Tokyo Motor Show, a novelty had a worldwide impact. A sports prototype was presented with the contribution of Toyota built with NANOCELULOSA (a wooden car in a journalistic version). It was actually the chassis and some internal systems. **Its weight is 50% less than the same model with conventional materials, but also its manufacture almost does not contribute to CO2 emission and it is a Biocompatible and Recyclable material.**

Cellulose is one of the most abundant polymers in nature; present in plant fibers, both in trees, crops, algae, etc.

In synthetic terms, NANO-CELLULOSE is plant material that has been decomposed into microscopic pieces, purified and rebuilt, with a nano-crystalline structure. **The result is a material with very important technological properties, light, with a weight / effort ratio 8 times stronger than steel and for being a polymer with flexibility in its applications.**

There are two classes of nano-cellulose: **the bacterial nano-cellulose** that is formed by the action of bacteria from plant residues and the other is the so-called crystalline **nano-cellulose** formed from plant fibers through mechanical and chemical processes (hydrolysis), with which crystalline cellulose fibers are obtained in nanometric dimensions.

The field of application is extensive, sensors, flexible electronic displays, filters and membranes, armored glass, resistant paper and cardboard, as concrete reinforcement and in general applications in many industrial activities. But it is necessary to highlight the massive application as a **REPLACEMENT OF PLASTICS and METALS** in a generalized way, as in the example of the car presented at the Tokyo exhibition.

This represents a breakthrough in the development of a sustainable and circular economy. This requires low-cost, mass production of nano-cellulose.

Since 2010, factories are being installed and research is being carried out to optimize processes and achieve a reduction in manufacturing costs.

Thus, a worldwide effort can be foreseen in the substitution of plastics and partially metals, a productive transformation and a great advance in the prevention of climate change and in the sustainability of the ecosystem.

ARGENTINA. Our country has immense natural resources, an industrial and science and technology structure that already has working groups on the subject. It seems natural that it should participate in this process also taking into account the need for sustainable economic and social development. In our opinion, a **STATE POLICY** is necessary to execute a Science and Technology-Industry interaction plan that includes an important development of the necessary research and a stimulus to industrial production, all in a process of broad collaboration.