
From Residues to Cellulose Nano-Fibers: Sustainable Use of Tropical Forests in the Amazon

The goal of this project is to provide alternative high value business opportunities from the biomass left at the forest harvesting sites at the Amazon to forestry enterprises involved in the sustainable management of the Amazon forest for the local production of Nanocellulose and derived renewable composites.

Linking Academic Cooperation with Technical Cooperation, we valorize harvesting residues of the tropical forests in the Amazon region (eg: native cellulose microfibrils) to develop cellulose nano-fiber reinforcements for nanocomposite materials. Our previous work with plant biomass indicates that cellulose nano-fibers with excellent mechanical properties and functionalities can be prepared by using green-technologies. In this project, we propose the preparation of cellulose-nanofibers by using novel green-chemistry technologies, as well as the assessment of feasibility of this green-nanotechnology in the performance improvement of nanocomposite materials for packaging, biomedicine and automotive industry.

The project is divided into three different tasks:

- 1) Design a highly sustainable forest management at the Amazon region by optimizing the chain supply of the residues from the harvested forest biomass.
- 2) Develop a low cost, innovative and environmentally-friendly technology to produce cellulose nanofibers from the forest harvesting residues, with high potential for technical implementation in the Amazonian region.
- 3) Economical, social and environmental life cycle assessment to evaluate the feasibility of the implantation of this Nanocellulose technology in the Amazonian region.

Title of project: Nanocellulose from Harvesting Residues: Innovative strategies to advance the sustainable use of the Amazon Forest

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