

1ST INTERNATIONAL WORKSHOP ON BIOREFINERY OF LIGNOCELLULOSIC MATERIALS (IWBLCM 2015)

The concept of sustainable economy is attracting increasing attention in all social aspects, especially in industrial production. An example of sustainable economy is the global exploitation of natural resources, taking place through the recovery of by-products and/or waste generated by agricultural or industrial activity. One of the main current challenges of the industrial sectors is the development of products that can fulfill new market requirements with an ecological commitment. Nowadays, the society is awakening and it is convinced of the needs for consuming products that have been produced through environmentally friendly processes.

The non-renewable nature of fossil fuels makes the current economic model unsustainable. For this reason, the biorefinery of lignocellulosic materials, also called second-generation, is becoming increasingly important. This process uses vegetable biomass of low cost with little commercial significance. Using the plant biomass as raw material is intended to take advantage of all the fractions derived from it, obtaining fuels (such as bioethanol or biodiesel) and various chemical products of commercial interest (products for cosmetic, food, pharmacy, polyphenols etc.), thus producing a maximum plant biomass valorization and a minimization in the production of residues.

In the bio-refinery, through different processes (physical, chemical and/or biological), biomass is transformed into a wide range of products with high added value. The whole process includes turning carbohydrates, lignin and other products into fuels, high value-added chemicals and other materials, with an approach to the prospect of not generating waste and with processes that ideally involve minimal energy and environmental impact.

Many scientists and technicians are studying the cellulose industry field to adapt the well-known paper production process to the above-mentioned sustainable economy concept. To this end, not only the improvement of the processes involved in the pulp and paper industry through biotechnology, but also their modification in order to integrate the pulp mill into a biorefinery, are being undertaken. Thus, the need for the use of each one of the wood cell wall components is imperative and under this concept, it can be achieved.

On the other hand, the reality is that in some countries, conventional raw materials for such industries are scarce due to the increasing demand for pulp and paper. Therefore, considerable efforts are dedicated to searching new natural resources and studying their feasibility to be used as raw materials in this industry.

This 1st *International Workshop on Biorefinery of Lignocellulosic Materials* was held in Córdoba, Spain, on 9 to 12 of June. Researchers submitted original works on the following topics:

- New raw materials, analysis and characterization of biomass
- Pre-treatment, fractionation processes
- Catalytic and biocatalytic conversion to fuels and to fine chemicals and chemical platforms
- Clean technologies
- Biobased polymers. Natural fiber based polymeric composites
- Nanolignocellulose and nanocellulose
- Bio-refinery: derivatives of cellulose, hemicelluloses, lignin and extractives
- New industrial experiences
- LCA, life cycle assessment

The Congress was attended by 90 participants from 19 countries: Portugal, Republic of Korea, Belgium, Uruguay, Poland, Austria, Germany, Finland, South Africa, Italy, Netherlands, Colombia, Chile, Norway, Sweden, Tunisia, Brazil, Indonesia and Spain. There were 4 planned plenary sessions, 21 oral presentations and 5 poster sessions where 71 works were exposed.

The 4 international researchers who offered a plenary conference were:

- **Orlando J. Rojas**, University of Aalto, Finland; North Carolina State University, USA, “*Lignin colloids as biorefinery material and their applications*”;
- **Maria Soledad Peresin**, VTT – Technical Research Centre of Finland, “*Emerging technologies: Nanofibrillated cellulose, its production, properties and potential applications*”;
- **Javier Dufour**, Chemical Engineering Department, University Juan Carlos I, Spain, “*Pyrolysis for fuel or carbon storage? A life cycle study*”;
- **Gary Chinga-Carrasco**, Paper and Fibre Research Institute (PFI), Biocomposites, Trondheim, Norway, “*Biobased materials – facing industrial and societal needs with multidisciplinary approaches*”.

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