

Strategic Workshop:
“Polymeric materials from renewable resources”

Date: 27 October 2016.

EXECUTIVE SUMMARY

The variety of macromolecular materials that can be prepared by exploiting vegetable and animal biomass has stimulated researchers to significantly improve the quality of these materials to beyond the ones based on petroleum. The success of this on-going approach depends on the efforts of multidisciplinary teams, and the strategic interaction between academic and industrial sectors.

This *Strategic Workshop* entitled “Polymeric materials from renewable resources” aimed at stimulating the discussion related to the state-of-the-art of the theme, highlighting the main challenges that are yet to be overcome, and at offering an important opportunity for reducing the gap between the mentioned sectors.

The first section, entitled “*Actual scenario*”, was initiated with two complementary talks from Prof. Alessandro Gandini (Grenoble Institute of Technology, France/São Carlos School of Engineering, USP) and Prof. Antonio Aprício da Silva Curvelo (São Carlos Institute of Chemistry, USP). Prof. Alessandro Gandini focused on the large range of possibilities of using biomass to produce monomers and polymers, illustrating the scenario with successful examples of materials that have similar or superior properties compared to their fossil-based counterparts. Prof. Antonio Aprício da Silva Curvelo highlighted the manifold possibilities of isolating key molecules from industrial processes that can be used as such or further modified to be applied in the production of macromolecular materials and fuels. The section was, however, concentrated in the interaction of the presenters with the audience, considering the limitations that are still important obstacles to the full utilization of this strategy. This section was mediated by Profa. Dra. Talita Martins Lacerda from EEL-USP.

The speakers of the second section, entitled “*Biorefinery*”, were Dr. Antonio Bonomi from CTBE, Prof. Dr. Júlio César dos Santos, from EEL-USP and Dr. Maria Teresa Borges Pimenta, from CTBE. The session started with general comments about the industrial products generated by biotechnological processes, including ethanol, monomers and polymers, and the steps related to the synthesis and isolation of such products. CTBE’s main infrastructure

and research fields were also addressed, focusing on the importance of dedicating a research centre in Brazil exclusively for the development of technologies related to sugar cane and its derivatives. The discussions with the audience were mainly based on the main general cost of biotechnological processes, and how much it reflects on the final prices of products once they reach the market. This section was mediated by Profa. Dra. Eliane Trovatti from UNIARA, Araraquara, SP.

The third section was dedicated to new industrial applications and technologies based on renewable materials, with talks from Eng. Marcos Fernandez (Cargill), Dr. Elaine Cristina Ramires (Fibria) and Dr. Daniel Kock (Braskem S.A.). Eng. Marcos Fernandez mentioned some new projects developed in Cargill, and the technological advantages of using renewable materials, showing a series of new products and inviting researchers to create new materials within Cargill's portfolio. Dra. Elaine Cristina Ramires showed the strategy adopted by Fibria, and Dr. Daniel Kock considered some Braskem products and presented the area of biotechnology and polyolefins derived from ethanol. This section was mediated by Prof. Dr. Antonio J. F. Carvalho from EESC/USP and Dra. Rosa Simencio Otero from EESC/USP.

The opportunity of stimulating fruitful discussions was of great importance to define the state-of-art of chemicals, monomers and polymers derived from biomass, to establish new collaborations (mainly involving academic and industrial researchers) and to consolidate the already existing ones.