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The shift of raw materials from oil, coal and natural gas to biomass and residues

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Oil, gas and coal have been used as raw materials for the production chain of most materials in our modern society. The development of petrochemical industries and processes has developed at an incredible trace. Considering that chemical industries in general have less than 150 years of existence and petrochemistry has developed only since the beginning of the XIX century, the chemical engineering professionals can be very proud of the astonishing job done to change the world we live in. The available materials nowadays like plastics, fibers, fuels, solvents and many others are mainly produced by the chemical industries from crude oil, carbon or gas. Its usage has been so wide, that even food or nature like products are being synthetized from fossil hydrocarbons, without forgetting the importance of the production of liquid fuels and other energy forms. This very wide range of applications has made mankind dependent of its extraction and the global economy is based on its price. Therefore, it is important that the chemical engineers apply the same concepts that have been applied for the conversion of oil into products and liquids, to the conversion of biomass and organic residues into the production of value added materials of our daily life. This can be accomplished by the development of bio-refineries, where the biomass is converted by thermochemical or biochemical ways into new products or precursors for the manufacturing industries. The processes that are need to be implemented for the conversion and separation of valuable products ranges from alternative synthesis pathways, chemical or biological, to new extraction and separation methods. In this study the main technologies that are being developed for the utilization of biomass for the production of chemical precursors and products are being presented and its state of the art evaluated.



Biography

Daniela Almeida Streitwieser has her expertise in the development of new technologies for the utilization of biomass and residues as alternative energy sources and alternative materials with value added to its components. Her passion is the creation process of new ideas to solve traditional problems in creative and innovative manners, such as the conversion of raw materials into value product, especially if the raw materials come from alternative sources, like residues from former processes or the agribusiness. She returned to Ecuador in 2007 after completing her PhD and gathering experience in the Waste Management and Renewable Energy sector in Germany and joined immediately the Faculty at the Department of Chemistry and Chemical Engineering at the University San Francisco de Quito, Ecuador. In 2008, she created the Laboratory for Development of Alternative Energies at USFQ, which becomes IDEMA in 2016. Since 2015, she is the Head of the Department of Chemical Engineering at USFQ.

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