

2nd International Congress and Expo on**Biofuels & Bioenergy****August 29-31, 2016 Sao Paulo, Brazil****Biofuels and chemicals from renewable sources a challenge for a sustainable progress****Elio Santacesaria**

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A brief analysis of the drawbacks arising for a continuous growing of the petroleum consumption in the world will be made as a premise of the lecture together with the examination of the advantages of limiting this growth by recurring to renewable sources for producing both biofuels and chemicals. The methods for producing biodiesel will be reviewed in detail by examining in particular all the catalytic, kinetic, thermodynamic aspects involved in the reactions normally adopted (esterification and transesterification) in the preparation processes starting respectively from refined vegetable oils, waste oils or fatty acids. Glycerol is an important by product of the biodiesel production and it is imperative to find remunerative uses for this substance for lowering the biodiesel cost. A general overview for the possible uses will be given and some specific examples will be examined in more detailed way. Then, two other oleochemical processes will be described as examples of added value chemicals produced from renewable sources, that is, the vegetable oil epoxidation and the oleic acid oxidation to azelaic and nonanoic acid. At last, ethanol, currently used in some countries as biofuel, can be considered a building block for producing conveniently the acetic series compounds, that is, ethyl acetate, acetic acid, acetic anhydride, acetaldehyde. This route passes through the discovery and use of new catalysts promoting a selective dehydrogenation or oxidative dehydrogenation of ethanol. At this purpose, two practical examples will be furnished.

info@eurochemengineering.com**Sustainable biofuels and biomass for energy and chemicals****Glauca Mendes Souza**

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Modern bioenergy in the form of liquid biofuels, bioelectricity, biogas, and more efficient heat contributes to about 3.5% of the world's energy matrix. Bioenergy production and use is expected to increase to about 20-25% by 2050 as part of a large global effort to decrease greenhouse gas (GHG) emissions and enable sustainable development. For road transportation it is expected that biofuels will contribute with almost 30% of the demand and in the aviation sector a fast transition to drop-in biofuels is planned without the possibility of using electricity and natural gas as substitutes. A wide-array of technological pathways using biomass as feedstock has been developed and is maturing with options to substitute petrochemical routes. Additionally, our growing knowledge of energy plants and microbes is creating new options to improve yields. The biomass industry will have an increasingly important role for bioproducts in an emerging bioeconomy geared towards sustainable practices. A global assessment of bioenergy sustainability was recently conducted under the aegis of SCOPE that evaluated the potential expansion of bioenergy and its impacts and benefits. Led by researchers from FAPESP Bioenergy Program (BIOEN) with contributions from 137 experts in 24 countries, the study concluded that there is enough land for bioenergy expansion without competition for food or other needs, and that this expansion is most likely to take place in Latin America and Africa, contributing to social and economic development. Brazil, in its sugarcane ethanol program, has seen an astounding number of new technological developments in the context of sustainability. The speaker will consider environmental security, food security, energy security and improvement of livelihoods, discuss recent scientific findings on biotechnology for bioenergy expansion and how the bioethanol first generation environment can contribute for second generation biofuels development.

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