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Short Communication

Creating the right (green) chemistry CO2, water and biomaterials

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ABSTRACT

In the billion years history of our earth, a most amazing and unique process has occurred of the massive conversion of the plentitude of the present CO2 in the atmosphere with water into biomass or biomaterials under the influence of solar energy, a process we call: photosynthesis. Because of this process the CO2 in the earthâ atmosphere dropped from 20% to 250 to 300 ppm. Part of these biomaterials over billions of years has been degraded and converted into coal, oil and gas, or what we call today fossil fuels. The accelerated use of these fossil resources over the last 200 years has led to a sharp increase in CO2, now already at 400 ppm and also the increase of methane (CH4) in the atmosphere, triggering global warming. It is our responsibility to invent, develop and apply the right green chemistry making use of the available natural resources such as CO2, water and biomaterials in a way which does not harm the ecosystems of our earth, meaning in a circular and sustainable way. Examples will be given of innovations in this exciting field over the last 15 years, leading to new technologies, opening the possibilities for: Advanced materials and chemicals from biomass and biomass waste; Fuels and chemicals from CO2 and water from the open air, making use of clean renewable energy (solar, wind, hydropower etc.).

Biography

Paul O Connor has completed his graduation from the Eindhoven University of Technology in Chemical Engineering in 1977. He has been active in heavy oil conversion processes at Shell and at Akzo Nobel in development of refining catalysts. In 2006, he formed BIOeCON, and focused on the economic conversion of biomass. BIOeCON has developed several breakthrough concepts, most recently a process towards selective biomass fractionation producing high value materials. In 2010, he formed ANTECY aiming to convert renewable energy directly into high-density liquids. ANTECY has developed technology for the capturing of CO2 based on a low cost and environmentally friendly non-amine sorbents.