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CO₂ AND CARBON CAPTURING, UTILIZATION AND VALUATION

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The accelerated use of 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 that does not harm the ecosystems of our earth i.e., in a circular and sustainable way. Innovations in this exciting field over the last 15 years will be highlighted, leading to new technologies, opening up the possibilities for advanced materials and chemicals from biomass, biomass waste and from CO₂ and water from the open air, using clean renewable energy (solar, wind, hydropower etc). Specific examples will be elucidated: capturing concentration of CO₂ from open air sources; conversion of fossil hydrocarbons into clean hydrogen and valuable carbon; harvesting of high quality cellulose and lignin materials from biomass. A combination of these promising technologies offers the possibility of transforming the CO₂ and/or carbon emissions problem into opportunity for producing valuable products.



Biography

Paul O' Connor has completed his Graduation in Chemical Engineering from the Eindhoven University of Technology in 1977. He has been active in Heavy Oil Conversion Processes at Shell and Akzo Nobel in development of refining catalysts. In 2006, he formed BIOECON, 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 capturing CO₂ based on a low cost and environmentally friendly non-amine sorbents.

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