

by M. B.

## Becoming a Bio-Economy Leader

David Sudolsky, President and CEO at Anellotech



*David Sudolsky is the President and CEO of Anellotech, one of the most dynamic and fast-growing companies in the US bioeconomy. In this interview with Renewable Matter he talks about his company and the US bioeconomy.*

### **What kind of business is Anellotech involved in?**

*“Anellotech is a sustainable technology company, focused on commercialising the innovative production of cost-competitive renewable chemicals and fuels from non-food biomass and potentially plastic waste.*

*Our patented Bio-TCat™ technology is an efficient thermal catalytic process for converting biomass*

*into BTX aromatics (a mixture of benzene, toluene and xylene), that are chemically speaking identical to their petroleum-based counterparts.*

*Bio-TCat™ has been extensively tested with pulpwood feedstocks at our TCat-8® pilot plant in Silsbee, Texas, which was jointly designed with our partner IFPEN. Bio-TCat™ can also use other non-food, renewable feedstocks or even plastic waste, further enabling the circular economy.*

*AnelloMate™ is the brand name given to the family of liquid products made through the Bio-TCat™ process, which includes ‘AnelloMate BTX,’ a naphtha containing over 90% bio-BTX and ‘AnelloMate Distillate,’ a middle and heavy distillate range hydrocarbon mixture.*

Anellotech,  
<https://anellotech.com>

Bio-based BTX can be used in a range of chemical applications and can also be used to make commodity plastics such as polyester (polyethylene terephthalate or PET), polystyrenes, polycarbonates, nylons and polyurethanes that are used to manufacture consumer goods such as beverage bottles, food packaging, clothing, footwear, carpeting, automotive and electronic components.”

#### **Are plastics produced in this way better for the environment?**

“A recent LCA study conducted by Jacobs Engineering found that CO<sub>2</sub> emissions for producing paraxylene and benzene from pulpwood using Anellotech’s process are estimated to be 70-80% lower than emissions for identical petro-based chemicals made from crude oils. If Bio-TCat™ products are used to make renewable gasoline and distillate fuel blendstocks, the reduction potential exceeds 90% as fuels are burned to make energy. Anellotech’s Bio-TCat™ technology will help aromatic chemical producers, refiners and brand owners meet their sustainability goals, due to its low carbon footprint and its non-food biomass feedstock. Our world-class R&D team is accelerating cost-competitive technology development and our partners include Suntory, Toyota Tsusho, IFPEN, Axens and Johnson Matthey.”

#### **What are your next steps?**

“Our main goal is to advance towards commercial-scale plant designs. Our pilot plant has been generating scale data to optimise the Bio-TCat™ process with tonnage-scale production and recently we have had some very positive results which validate Bio-TCat™’s economic potential – giving us confidence that initial scales of production are viable.

The Bio-TCat™ technology viability has been proven as we achieved commercially-targeted yields in our TCat-8® pilot unit during six months of continuous process operations, surpassing 5,000 hours of on-stream operations. Engineering work together with partner Axens began in June 2019 and once funding is secured the next phase of construction will begin in the second half of 2020.

We expect that the first plant will be capable of processing 500 bone dry tons/day of loblolly pine wood into 40,000 tons/year (860 barrels per stream day or BPSD) of products including benzene, toluene, xylenes and C9+ aromatics to use as fuels or for making bio-based plastics for packaging and consumer products. 30,000 tonnes of carbon monoxide (CO) and other by-product gases will also be produced, for use in generating renewable electricity or for chemical feedstock.

Finally, we are also working on commercial plant engineering activities with our partner Axens and we are engaging with potential partners for investments and locations for the first commercial plant.”

#### **What are the strengths and weaknesses of the US bioeconomy? What measures have been implemented in the US to support the development of the bioeconomy and what do you think should be implemented in the short term?**

“As a biotechnology and innovation-focused nation, the United States has become a bioeconomy leader. The 2012 National Bioeconomy Blueprint helps promote the construction of biorefineries and biofuel production and US chemical companies are increasingly using bio-based production processes.

The USDA’s BioPreferred Product scheme for labelling bio-based products was set up back in 2002 as Congress was focused on new markets. Its reauthorisation in the 2014 Farm Bill helped strengthen its reach – it now counts 109 product categories.

However, the United States could go even further with more ambitious policies. The Department of Energy says the US could potentially produce 1 billion dry tonnes of biomass annually by 2030 and that this much biomass would be enough to generate up to 50 billion gallons of biofuels, produce 50 billion pounds of bio-based chemicals and bioproducts, and generate enough electricity to power 7 million households.\*

Congress created the renewable fuel standard (RFS) programme to reduce greenhouse gas emissions and expand the nation’s renewable fuels sector while reducing reliance on imported oil. This programme should be applied to renewable chemicals as well as biofuels, since both offer a significant reduction in greenhouse gas emissions.”

#### **From your point of view, who are the major bioeconomy players in the US?**

“Among many companies we have recently heard impressive presentations at bio-based conferences from DuPont, LanzaTech, Genomatica and Ginkgo Bioworks. These companies have managed to commercialise technologies or raise significant funding.”

#### **How is the bioeconomy perceived by American public opinion?**

“While not yet at the levels seen in Europe, American interest in the bioeconomy is increasing every day, particularly among millennials.” ●

\*The U.S. Bioeconomy by the numbers, [https://www.energy.gov/sites/prod/files/2017/09/137/bioeconomy\\_by\\_the\\_numbers\\_infographic.pdf](https://www.energy.gov/sites/prod/files/2017/09/137/bioeconomy_by_the_numbers_infographic.pdf)