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Concept and challenges of modern biorefineries

Alex Michine
MetGen, Finland

Biofuels, chemicals, and materials derived from lignocellulosic biomass have been the focus of the international R&D community and technology developers for the last decades. However, despite intense efforts, a real breakthrough has not been achieved yet. This has been mainly due to a biased view, focusing solely on a certain end product–for example, cellulose pulp or ethanol–and considering by-products as low-value waste streams for energy applications. With the new wave of lignocellulosic biomass fractionation technologies being demonstrated at a pilot scale, success stories are closer than they have ever been. Biomass fractionation to high purity intermediate building blocks of cellulose to C6 sugars and hemicellulose to C5/C6 sugars and lignin, instead of just one main product, provides a way to produce a diversity of products and establish novel bio-based value chains. Especially important is the availability of higher purity lignin for different direct drop-in or after processing (depolymerization etc.) applications, which–compared to the conventional lignins derived from pulp mills or ethanol refineries–provides totally new applications and perspectives to enable the increased use of biobased raw materials in various industries.

Biography

Alex Michine is a Founder and CEO of MetGen since 2008. MetGen is a biotechnology company committed to serving industrial customers with enzymatic solutions tailored to their specific needs. He is a serial entrepreneur in the industrial biotechnology sector. He has relentlessly been promoting the future technologies for bioeconomy and has been an active spokesperson for great potential of cross-disciplinary collaboration.

alex@metgen.com

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