

5th Annual AIChE Midwest Regional Conference

January 31st – February 1st, 2013

Organized by the Chicago Local Section of the AIChE

Hosted by the Illinois Institute of Technology, Chicago, IL

Session Th3C: 3:00pm -4:30pm, Thursday January 31, 2013 (Trustee Room)

Biochemical Innovation and Commercialization

Session Organizer: Donald Chmielewski, Illinois Institute of Technology

Session Co-Chairs: Nik Rokop, Illinois Institute of Technology and Yongyou Hu, Elevance

3:00pm Elevance Renewable Sciences Biorefinery Process: Specialty Chemicals from Natural Oils

Brady Dreyer, Elevance, Woodridge, IL

Elevance Renewable Sciences, Inc., based in Woodridge, IL, creates valued specialty chemicals from natural oils. Using olefin metathesis, the company's proprietary biorefinery process creates high performance difunctional platform molecules which are effective building blocks for ingredients used in personal care products, detergents, fuels, lubricants and other specialty chemicals markets. In this presentation, the biorefinery process, the biorefinery products, and the markets for the products will be discussed.

3:30pm Commercializing Gas Fermentation

Mike Schultz, Lanzatech

LanzaTech has developed a novel gas fermentation process that can convert carbon monoxide and hydrogen containing gases into fuels and chemicals products. The LanzaTech process can convert these gas streams into Ethanol and 2,3-Butanediol, a C4 dialcohol that can be converted into conventional chemicals such as MEK and butadiene. Synthetic biology techniques have also enabled production of products such as propanol, n-butanol, and acetone. LanzaTech is also actively working with partners for the conversion of these products into downstream petrochemicals, plastic pre-cursors, and drop-in fuels, providing an alternate route to add value to the carbon in these gas streams. This talk will focus on the commercialization of LanzaTech's technology, including the challenges and successes to date.

4:00pm Direct Replacement Fuels and Aromatic Chemicals from Biomass

Liz Woods, Virent

Virent creates the chemicals and fuels the world demands from a wide range of naturally occurring, renewable resources. Using patented catalytic chemistry, Virent's technology can replace over 90% of a barrel of crude oil. Our breakthrough catalytic technology transforms renewable plant sugars into the same range of hydrocarbon molecules historically made from refining petroleum, including gasoline, diesel, jet fuel, paraxylene, and other petro-chemicals. Virent's direct replacement drop-in products can be blended in high concentrations with no new infrastructure investment; they are ready to work in today's chemical and fuel supply chains. Additionally, Virent's BioForming™ process is able to use a wide variety of feedstocks, including cellulosic feedstocks like bagasse, corn stover, grasses, sorghum and wood as well as conventional feedstocks like beet sugar, sugar cane and corn starch. Virent's feedstock flexibility enables optimization based on availability, price or other considerations important to our customers. With 30 awarded patents and more than 150 pending applications, Virent has solidified our position as a leader in the biofuels and chemicals arena. Beyond the ground breaking research and development, Virent has developed key strategic relationships with Cargill, Coca-Cola, Honda and Shell, adding vital resources and expertise required to accelerate commercialization of our technology. With the crucial combination of technology and strategic relationships, Virent is poised to break into the market place.