

Next Generation

BIO-BASED CHEMICALS SUMMIT

Bringing Together the Value Chain for Drop-In Chemicals
Derived from Cellulosics, Algae, Waste Streams & CO₂

February 8-10, 2010 | San Diego, CA



florida biofuels association, inc.



Pre-Summit Technical Symposium: **Innovative Platforms for Biomass-to-Chemicals Conversion**

February 8th, 2010 San Diego, CA

Creation of chemical products from biomass has a long history dating back to the 1920s when Henry Ford was molding automotive parts from soy-plastics. Successive waves of activity have taken place, but only recently have bioplastics, and now bio-based chemicals, started to gain real traction. This is made possible by the convergence of several factors: high oil prices, sustainability concerns, an emerging biofuels industry, and finally the explosion of biological knowledge, computing power and bio-engineering techniques. This Pre-Summit Technology Symposium will offer presentations that drill down into research breakthroughs for various conversion methods, as well as broader sustainability perspectives. Attendees will gain a sense of where the science behind bio-based chemicals is headed, and discover opportunities for partnering on future projects.

7:00 - 8:30 Registration (Sign In) & Continental Breakfast

8:00 - 8:30 Keynote Address
Bhima Vijayendran, *Chief Research Officer*, **BATTELLE SCIENCE & TECHNOLOGY MALAYSIA**

8:30 – 10:30 Part I. Designer Organisms, Metabolic Engineering and Synthetic Biology

The explosion of tools and computing power available for analyzing and controlling the genes, metabolic pathways and gene expressions of simple organisms (yeast, fungi, bacteria, algae) is enabling major breakthroughs in biochemicals production. The maximum reach of these biotech approaches are being pioneered under the rubric of synthetic biology – evoking the ability to ‘code’ from scratch entirely new gene sequences/circuits and protein pathways, instead of just cutting and pasting specific genes from one

organism to another. This session will profile some of the most exciting new developments using genetically and metabolically modified organisms, covering both tools, techniques and broad “platforms” for conversion of biomass and CO₂ into useful chemical compounds.

Presenters:

Mark Burk, *Chief Technology Officer*, GENOMATICA

John Bissell, *Chief Executive Officer*, MICROMIDAS

John Ellersick, *Succinic Acids Program Manager*, MYRIANT TECHNOLOGIES INC

Michael Lynch, *Chief Scientific Officer*, OPX BIOTECHNOLOGIES

10:30 – 11:00 Networking Break

11:00 – 1:00 Part II. Hydrolysis, Fermentation and Related Hybrid Platforms

Advances in enzymatic and fermentation methods used to break down plant cell walls into sugars, and ways of converting the sugars and other biomass-derived compounds into “drop-in” compounds for established chemical markets will be examined.

Presenter(s):

Nelson Barton, *Vice President, Research & Development*, VERENIUM

Richard Gross, *Chief Technology Officer*, SYNTHEZYME

Peter Keeling, CENTER FOR BIORENEWABLE CHEMICALS

Blake Simmons, *Manager, Biomass Science and Conversion Technology Department*, SANDIA NATIONAL LABORATORIES

1:00 – 2:15 Luncheon and Networking Break

2:15 – 3:15 Part III. Chemical & Thermochemical Conversion

Gasification and pyrolysis are two of the most well-established methods of breaking down biomass into syngas and char. Nearly infinite variations on the underlying mechanisms exist, and new companies based on such variations are still announced on a regular basis. With further process steps the syngas can be readily configured into alcohols and any number of high value “intermediate” or “building block” chemicals. This session will highlight some of the more innovative approaches to gasification and pyrolysis, as well as packaged processing technologies to achieve the desired chemicals output.

Presenters:

Greg Keenan, *Vice President*, VIRENT

Dan Verser, *Founder and Executive Vice President of R&D*, ZEACHEM

3:15 – 3:45 Networking Break

**3:45 – 4:45 Part IV: Challenges of Downstream Processing and Chemical Conversion
of Fermentation Products**

Traditional petrochemical routes to chemicals are normally run in high concentration in non-aqueous conditions. Fermentation, on the other hand typically produces a low concentration of the desired product in a large volume of water with a complex set of byproducts. This session will feature presentations describing the challenges of isolating chemical intermediates or products from fermentation broths and approaches to solving those challenges. This session will also feature presentations on the chemical conversion of fermentation products in "drop-in" chemical replacements for established chemical markets.

Presenters:

Yvon Durant, *Principle*, ITACONIX LLC

Seth Snyder, *Section Leader, Process Technology Research, Energy Systems Division*, ARGONNE
NATIONAL LAB