



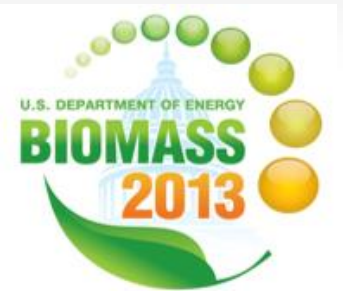
Virent, Inc.

Andrew Held

Senior Director Feedstock Development

Navigating Roadblocks on the Path to Advanced Biofuels Deployment

Aug 1, 2013



VIRENT AT A GLANCE

The global leader in catalytic biorefinery research, development, and commercialization

Technology

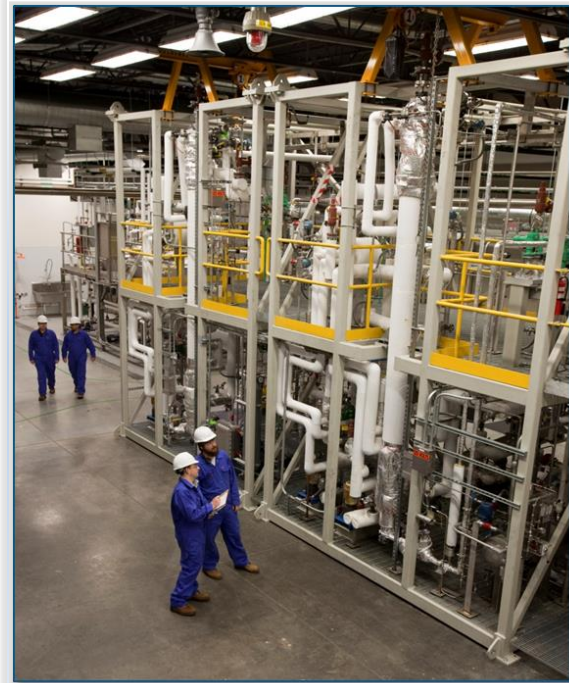


**Converting plant-based feedstocks
to fuels and chemicals**

Partners & Investors



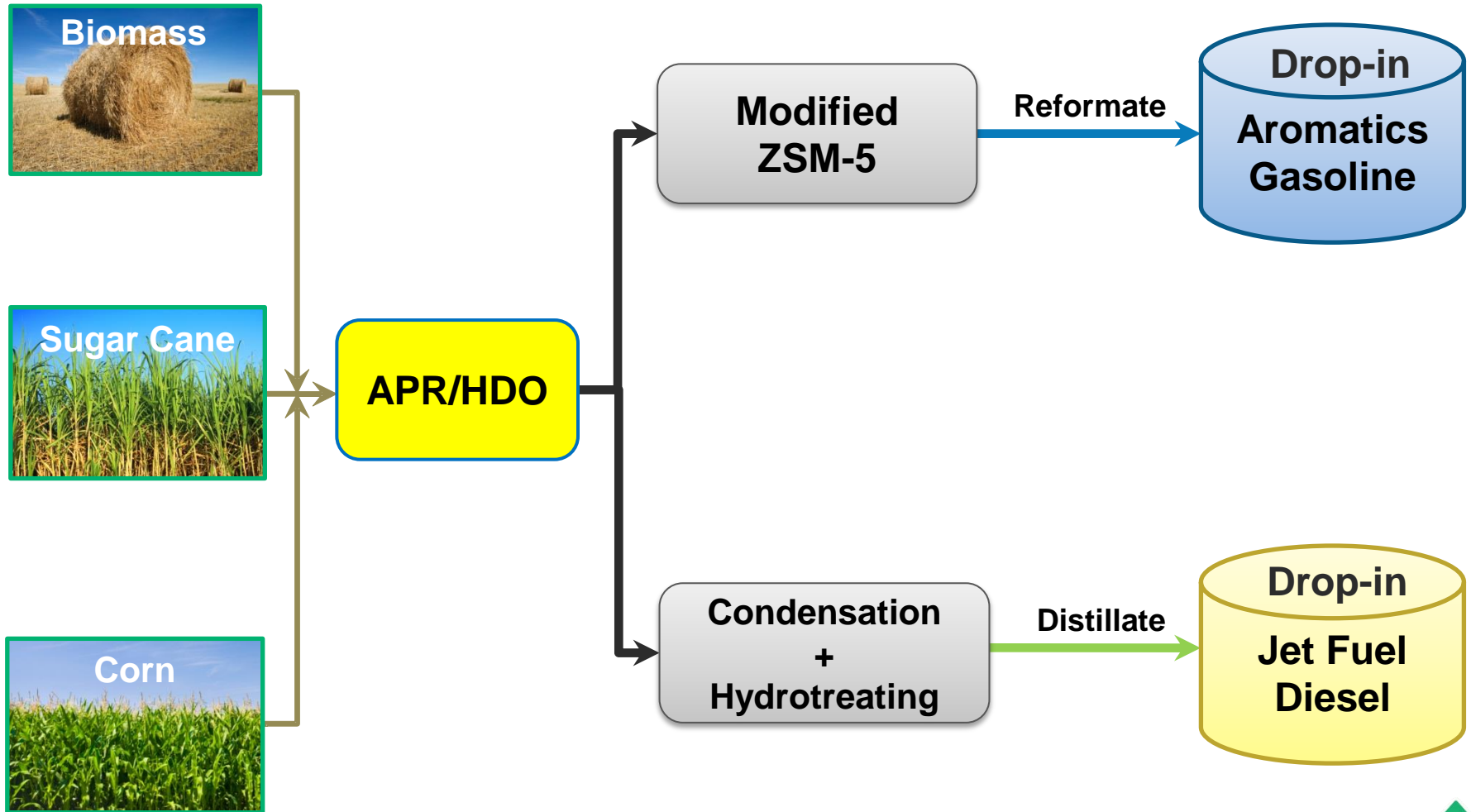
Flexible Infrastructure Platform



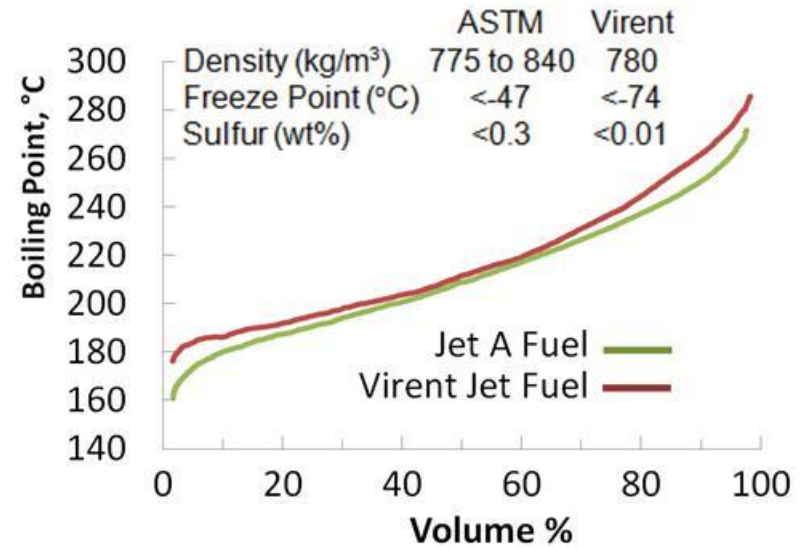
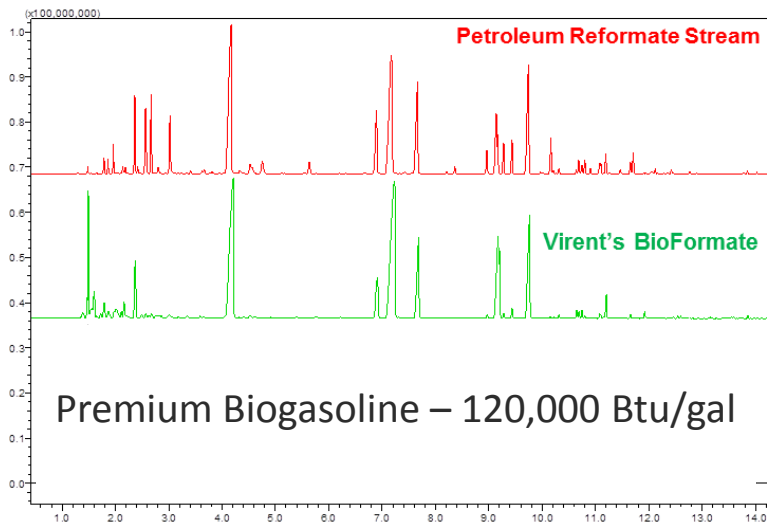
**20+ Development Pilot Plants
5,000 gal/yr Demo Plant
10,000 gal/yr Demo Plant
76 issued patents
160+ pending applications**

The BioForming[®] Concept

Biobased feedstocks to direct replacement products



DIRECT REPLACEMENT, DROP-IN FUELS



Virent Fuel in Scuderia Ferrari Race Fuel



Virent Distillates Meet ASTM Specs

DISTILLATE DEMONSTRATION PLANT UPDATE



Current status

Delivered over 100
gallons of jet fuel to
Air Force Research Lab,
Wright-Patterson
AFB





ICIS Chemical Business

ANALYSIS OF CHEMICAL MARKETS



**M&A DRIVERS
BANKERS SEE
MORE ASSETS ON
SELLING BLOCK
UPDATE P14**

ETHYLENE OXIDE
US EO supply is expected
to be tight going into April
and May after an active
turnaround season **42**

ASIA MDI
Further price hikes
possible as producers
face margin squeeze
from benzene costs **43**

March 12-18, 2012

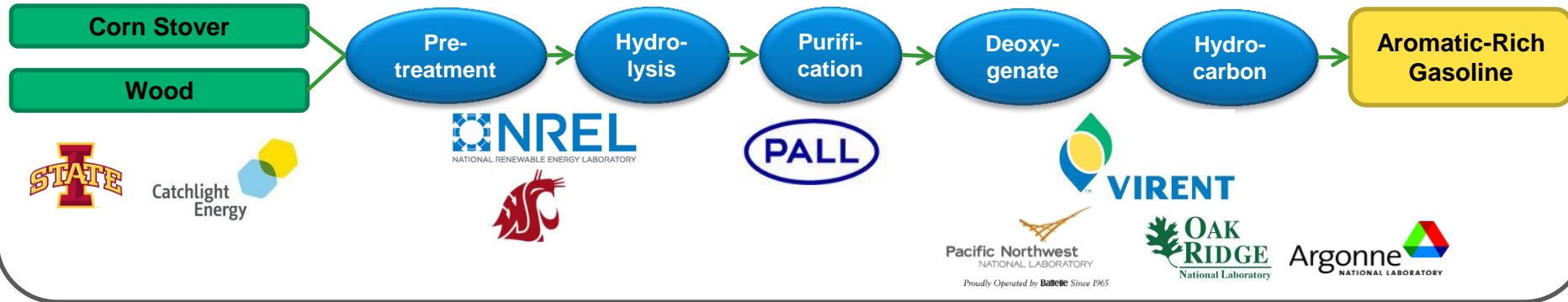
Periodicals Entry



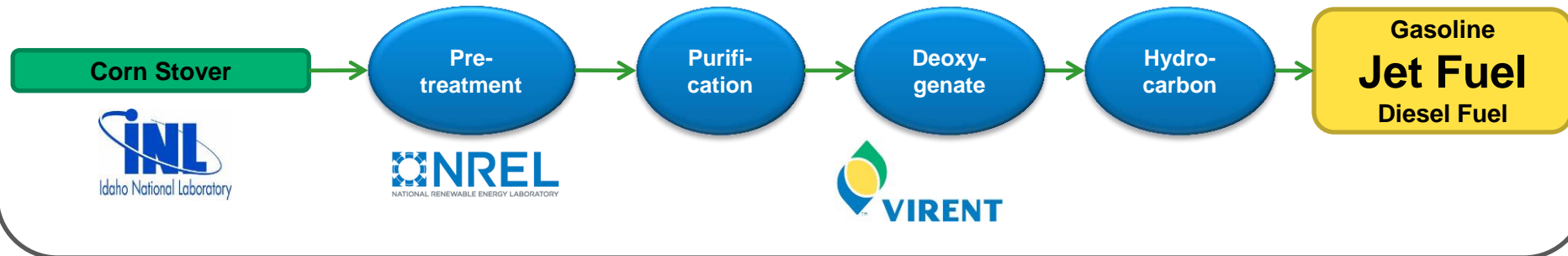


DOE PROJECTS – BIOCHEMICAL FOA's

National Advanced Biofuels Consortium (NABC)

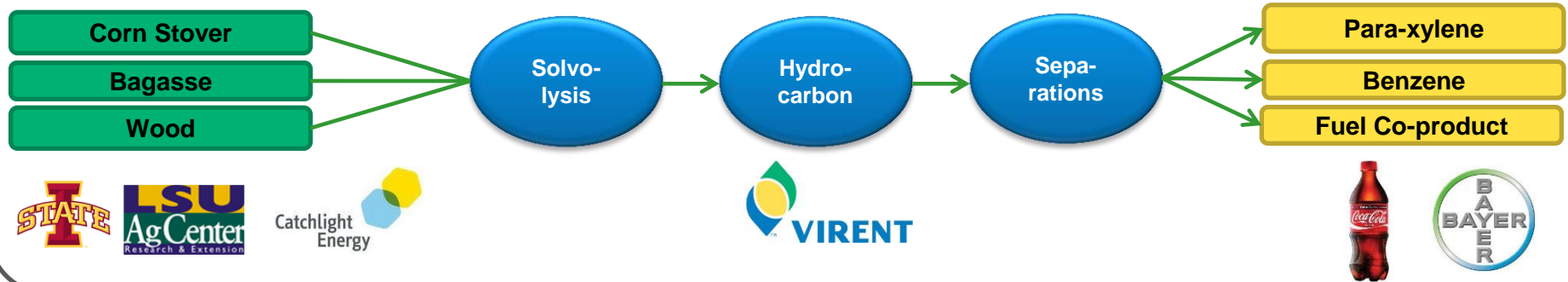


Biochemical FOA 2011

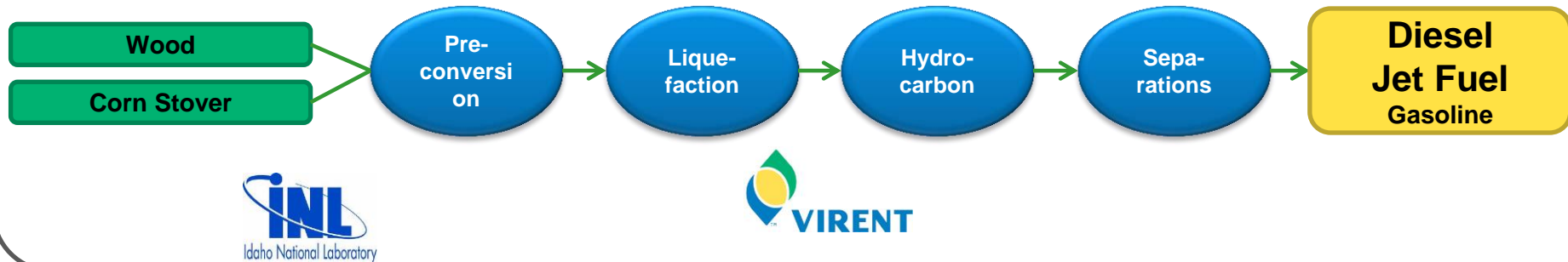


DOE PROJECTS – BIO-OIL FOA's

Thermochemical FOA 2011



Thermochemical (Bio-Oil) FOA 2013



Well funded, coordinated program making large strides on biomass.



DISCUSSION ON OVERCOMING ROADBLOCKS

Roadblocks Come in Many Stripes

◆ Technology

- The technical challenges are real.
- Collaboration partners and product options are key to de-risk commercialization.

◆ Economics

- Economic conditions and droughts are beyond our control, but very real.
- Big balance sheets are preferred, even then 'comparative ROI' is key.
- High oil prices actually incent more US oil production.
- The biofuels winners will offer the best combination of products and economics.



ROADBLOCKS (CONTINUED)

Market forces drive incremental improvements well; categorical improvements in the U.S. biofuels industry require reliable policy.

♦ Regulatory

- RFS is supportive, yet improvement needed.
- Obligated parties exercise lowest cost RFS compliance possible.

♦ Tax

- For example, expand MLP and REIT options.
- Better tax credit options to facilitate investment financing.



VIRENT SUMMARY

- ◆ Leading technology with catalytic conversion to drop in fuels and aromatic chemicals
 - IP, Infrastructure, Partners, Size of Market, Financing, Economics
- ◆ Economically attractive process
 - Higher Yields and Feedstock Flexibility Relative to Fermentation
 - Competitive Pathway to Px
 - Market Supports Green Pull
- ◆ Continued investment in technology will allow Virent to de-risk scale up
 - \$28m in Government Grant Awards over 5+ yrs (DOE, FAA, USDA, Navy)
 - Shell Collaboration and Equity
 - Cargill, Honda and other VC Equity with Longer Term Views
 - Expect New Chemical Partner to Support Coca-Cola Collaboration



Thank you.



VIRENT IS REPLACING CRUDE OIL.

Andrew Held

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