Anellotech

University of Massachusetts-Amherst
Clean Energy Connections
October 20, 2010

David Sudolsky, CEO

Lowest Cost Producer of Commodity Petrochemicals (Green or Petroleum-Derived)

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- Two tranche Series A financing ($5 Million + $13 million), 2.5 years total to major corporate partnership
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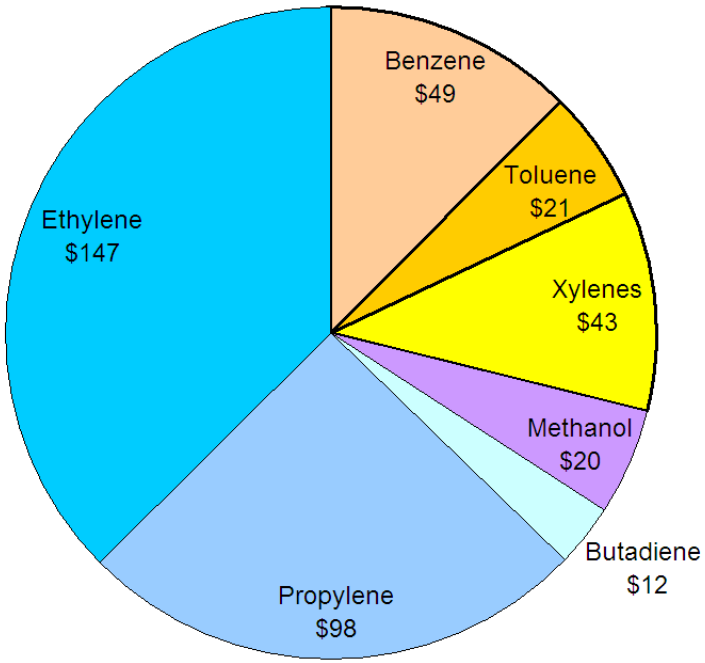
Huge Market, Broad Applications

2008 Global Petrochemical Market
$390 billion



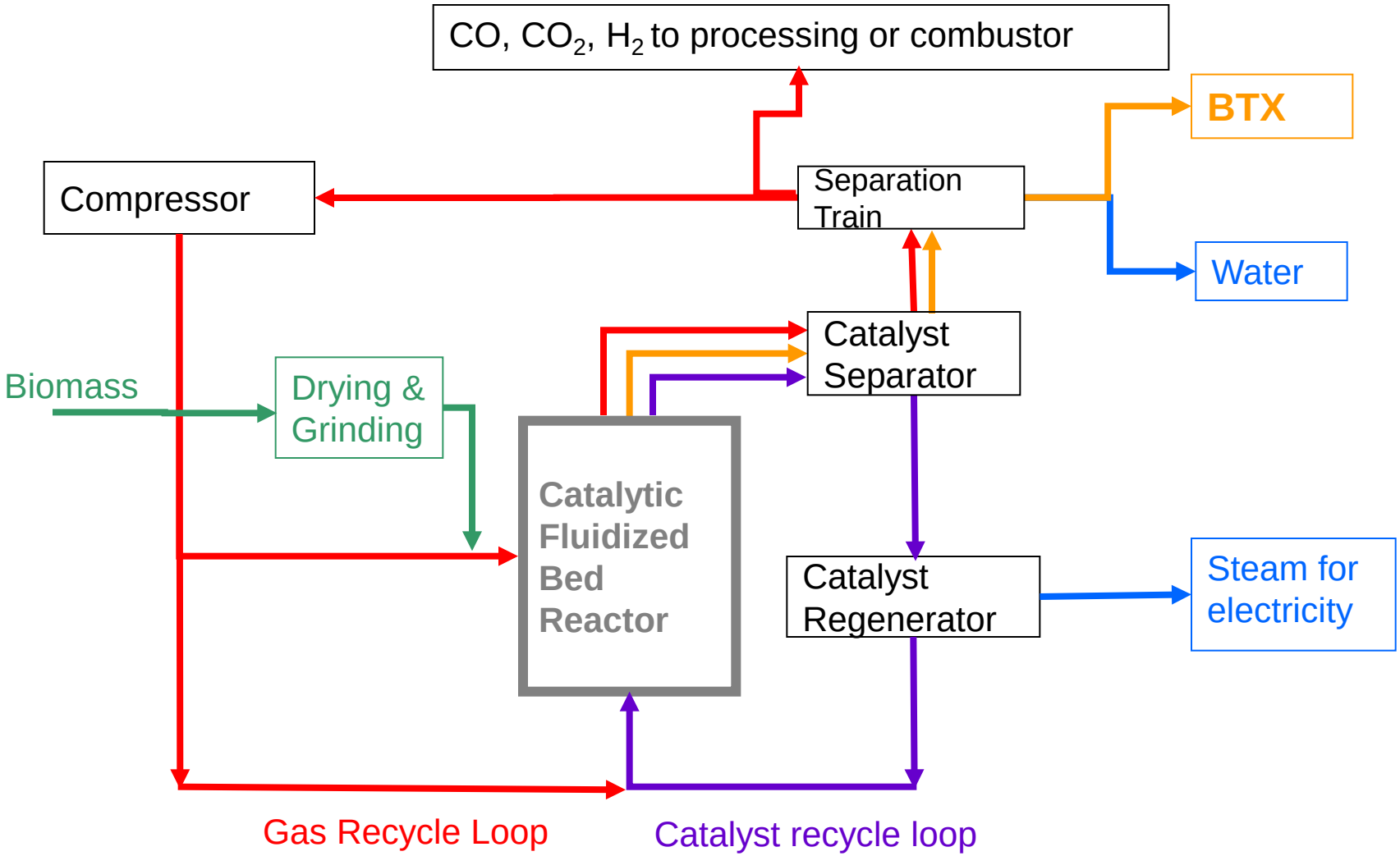
Source: Chemical Economics Handbook, ICIS

Products Made From BTX

Multiple Feedstocks

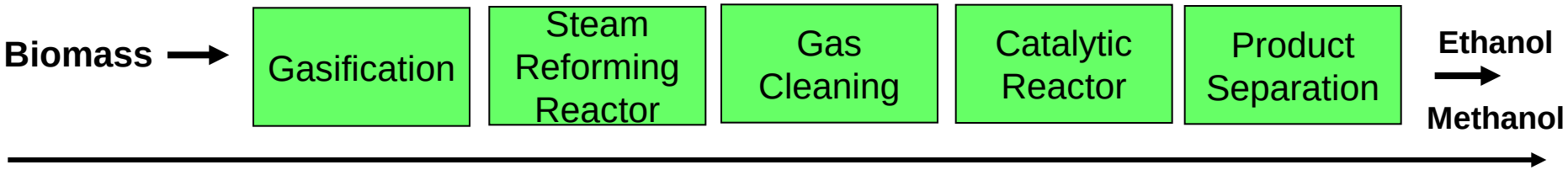
- Broad array of non-food feedstocks

Anellotech's Process Uses Known Chemical Engineering Operations with Unique Reactor Design, Catalyst and Operating Conditions

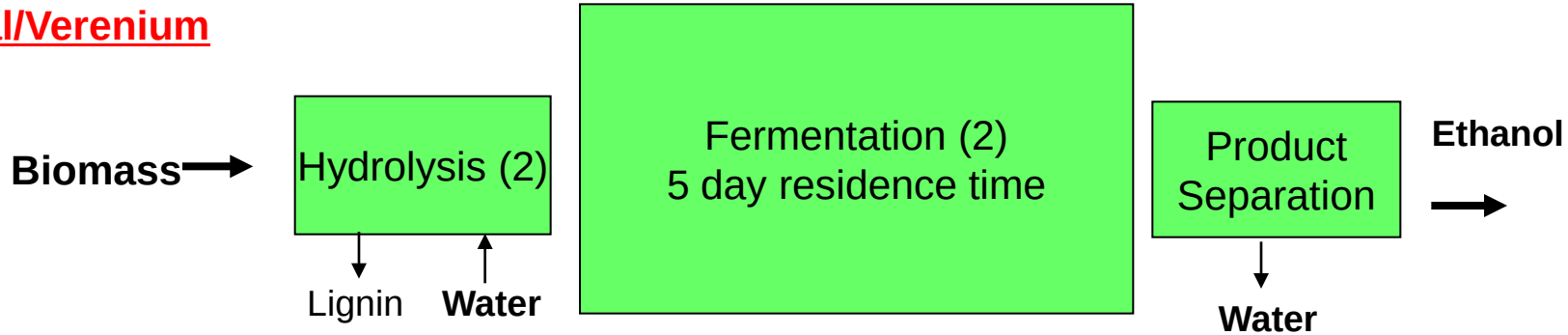


Simpler Process vs. Competitors– Much Lower CAPEX, Operating Costs, Complexity

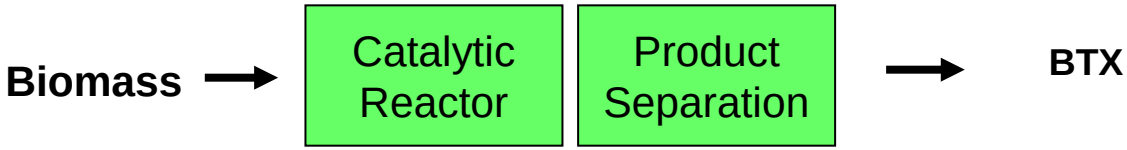
Gasification/Range Fuels



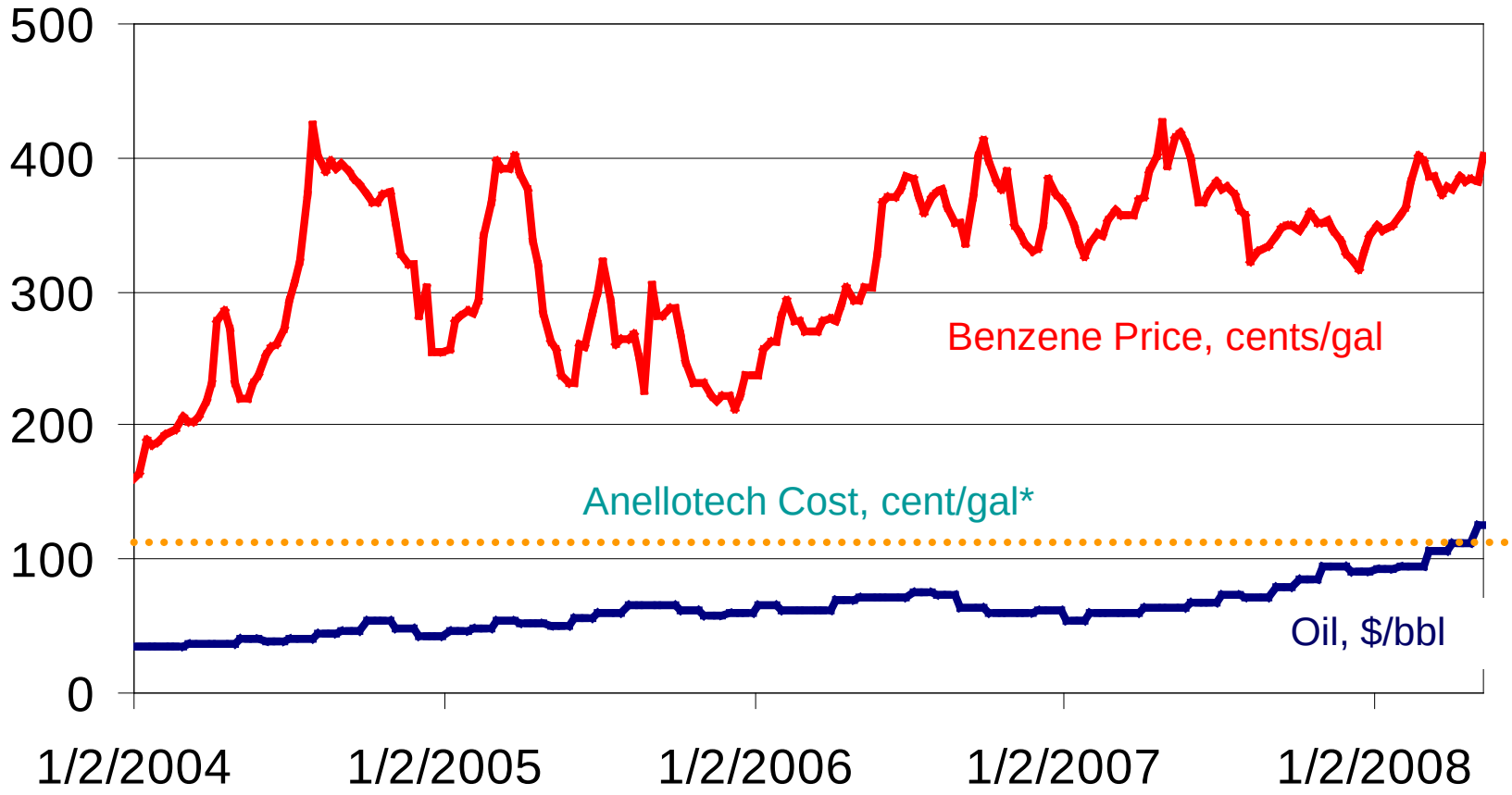
Biological/Verenium



Anellotech/Catalytic Fluidization



Anellotech's Costs Are Very Competitive



*Assumes $50/dry ton delivered feedstock cost

Anellotech is the Exclusive Global Licensee

- Univ. Massachusetts Patent Application covers the process, products, and catalyst
- R&D at Amherst supported by $4 million NSF, DOE and DARPA grants
- Patent application under review by patent office. Favorable international search report issued
- Anellotech has option rights to technology improvements

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10 Kg/Day Feed Reactor Shows Viable Yields

•2” diameter reactor

• Screening catalysts, feedstock and operating conditions

•Next step: 12” diameter 2 ton/day pilot reactor

Four Years to Commercial Operations

	Year 1	Year 2	Year 3	Year 4	Year 5
Technology Implementation **- Catalyst optimization** **- Pilot reactor operations** **- Demo mfg plant design**	R&D				
Demo Mfg Plant Build, Proven		Demo Mfg Plant			
Comm. Plant Construction			Build Com Plant		
Comm. Plant Operations					Ops

Total Financing Needed	$18 million	$47 mm

Rapid Path To High Valuation

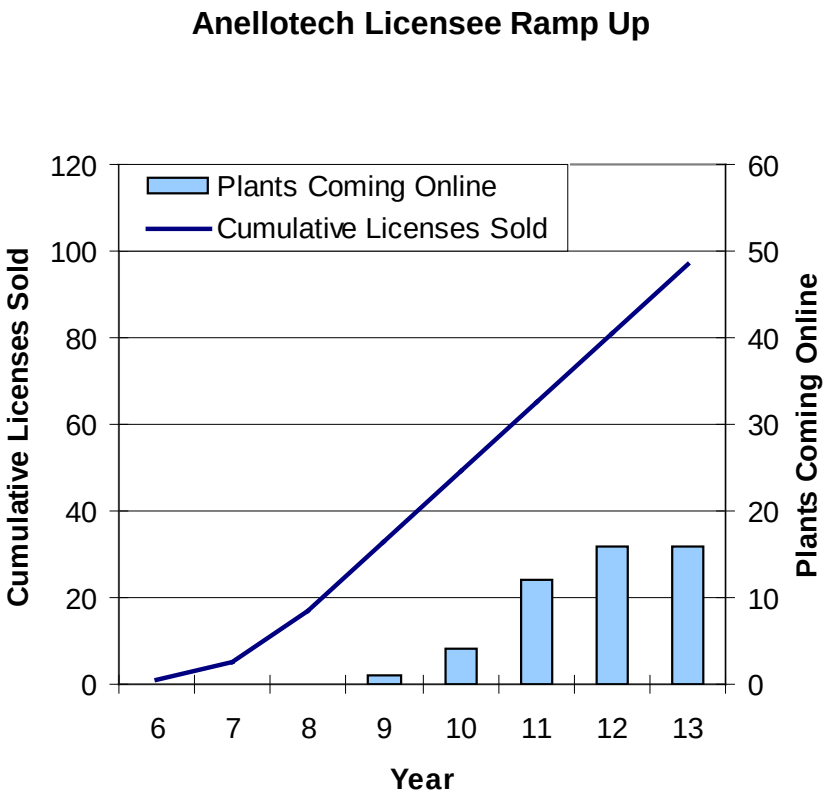
- Substantial corporate partnership after completion of demonstration plant phase (2012)
  - Chemical companies generally make major investment decisions based on pilot plant operations
  - The chemical industry has decades of experience scaling up fluidized bed reactors [contrast with biotech processes]
- Profitable Small-Scale Commercial Plant on line in 2014
- Substantial licensing book established rapidly thereafter

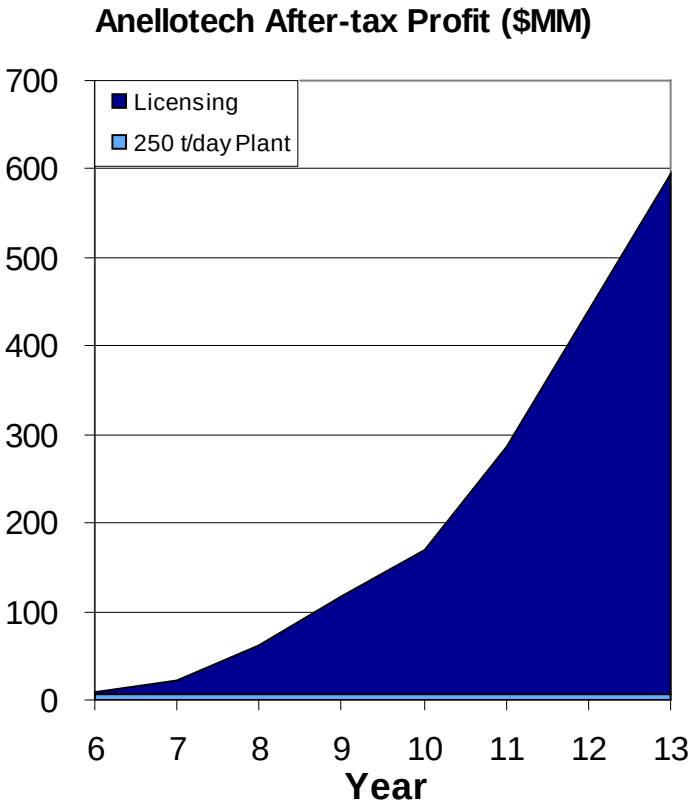
44% IRR for Large-Scale 2,500 mton/day $220 million Commercial Plant with $50/dry ton-delivered Feedstock

Revenue	($ million)				
BTX	192				
Byproducts	17				
Total Revenue	209				
Expenses					
Feedstock	44				
Other operating Costs	38				
Total Expenses	82				
Net Profit	127				
BTX Production Volume	62	million gal/yr			
BTX Production Cost, $/gal*	$1.05				
*(Total Expenses minus Byproducts Revenue)/BTX Production Volume					

•*Analysis excludes leverage, subsidies and tax credits*

Aggressive Licensing and a 250 t/day Plant Generates $300 Million Pre-Tax Profit 5 Years After 250 ton/day Plant Start up





Management

David Sudolsky *Founder and President & CEO*	• CEO/officer of four biotech/bioprocessing start-ups, one was sold for $1.8 billion • Ex-Dura Pharmaceuticals, Union Carbide, Booz-Allen • Chemical engineer, MBA from Columbia University
Dr. George W. Huber *Founder and Chair of the SAB*	• Armstrong Prof of Chemical Engineering at U. Mass-Amherst • Biofuel research licensed by Virent Energy Systems • Scientific American July 2009 cover story
Dr. Anne Gaffney *VP Research*	• Former VP Technology at Lummus, ex-Arco, Rohm & Hass • 30+ years experience in developing catalytic processes
Dr. Dennis McCullough *Business Dev. Consultant*	• Former president Badger Licensing (Shaw/Exxon JV) • 30+ years business development experience with Shaw Group, ABB Lummus Global, Bechtel, Litwin, and Eastman Chemical
Dr. Cawas Cooper *VP Process Eng*	• Air Products (Chemicals division), Catalytica • 30+ years experience in pilot plant process engineering
Jeffrey Whiting *VP Operations*	• Monsanto/Solutia chemicals business • 30+ years experience in construction, start-up and operations of pilot to commercial scale chemical plants

Advisory Board

Dr. Edward Wolynic *R&D, Catalysis*	• Former Engelhard CTO and Group VP Strat. Tech Former UOP VP R&D
Dr. Steven Lerner *R&D, Industrial Gases*	• Former CTO Praxair, 25+ years R&D management experience
Carl Bartoli *Engineering & Construction*	• Former President & CEO, Foster Wheeler USA • Engineering & construction of HC, coal gasification and infrastructure facilities
Dr. Fred Pesa *R&D, Fluid Bed, Catalyst*	• R&D Head, BP USA • Teams pioneered several fluid bed cat processes
Dr. Andrew Swanson *Chemical Markets*	• Global Business Manager, CMAI • 20 years chem company mgmt experience , ICI
Dr. Lanny Schmidt *Prof, ChE and MS&E, U Minn*	• Reactor, Catalyst, Biofuels Expert, Member National Academy of Engineering

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Petrochemicals from Biomass

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