


Developing a New Class of Cellulosic Bio-based Fuels and Chemicals

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 New Biomass-based Industries	
Opportunity	Description
 <p><i>Biomass</i></p>	<ul style="list-style-type: none"> • Forest residues • Other forest products • Pellets
 <p><i>Power and Heat</i></p>	<ul style="list-style-type: none"> • Replacing fossil fuels • Expansion and new capability
 <p><i>Biofuels</i></p>	<ul style="list-style-type: none"> • New generation biofuels (non food)
 <p><i>Biochemicals & Biopolymers</i></p>	<ul style="list-style-type: none"> • Displace petroleum • Biopolymers • Other Chemicals

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Overview

Lowest cost green commodity chemicals and fuels

- Incitor is commercializing chemical processing breakthroughs to inexpensively convert cellulosic biomass into high-value chemicals & fuels
- Initially targeting the \$17.3 billion levulinic acid market
- Headquartered in Albuquerque, NM with 15 NM employees
- Experienced venture-backed leadership

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Simple, Inexpensive 2-Step Process

Cellulosic Biomass to Fuel

Biomass to CMF

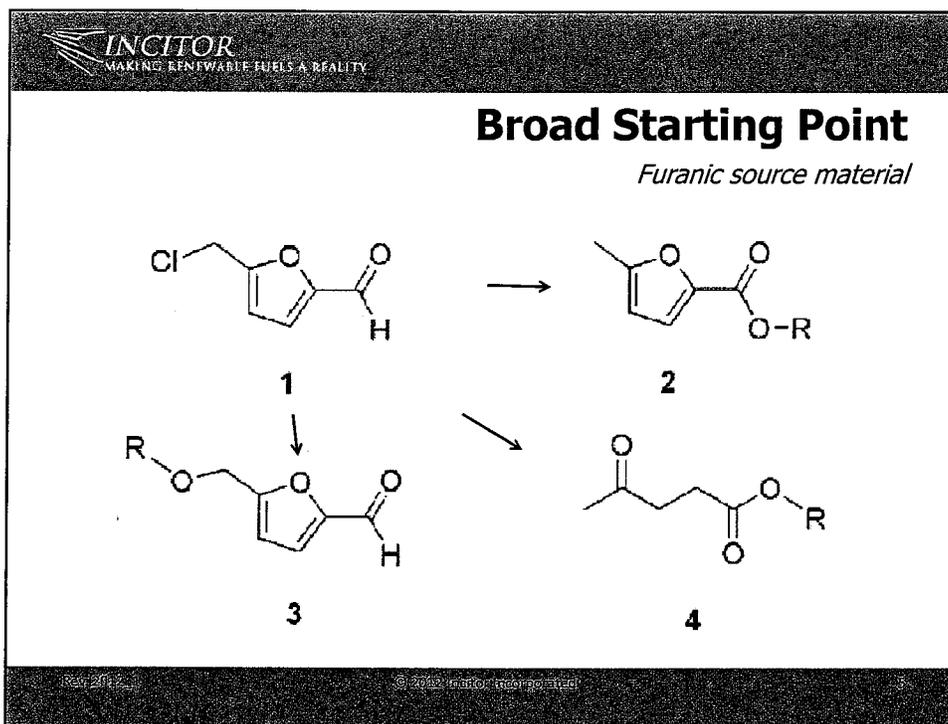
- Established Technology
- Converts C-6 Sugars

CMF to Alkyl Ester

- Add Transfase™ & Any Alcohol
- \$1.60 per Gallon

The reaction scheme shows the conversion of a C6 sugar (likely glucose) to a furfural derivative (5-(chloromethyl)furfural) using HCl at 80 °C. The second step shows the conversion of the furfural derivative to an alkyl ester (ethyl furfuryl ether) using DBU and THF:EtOH.

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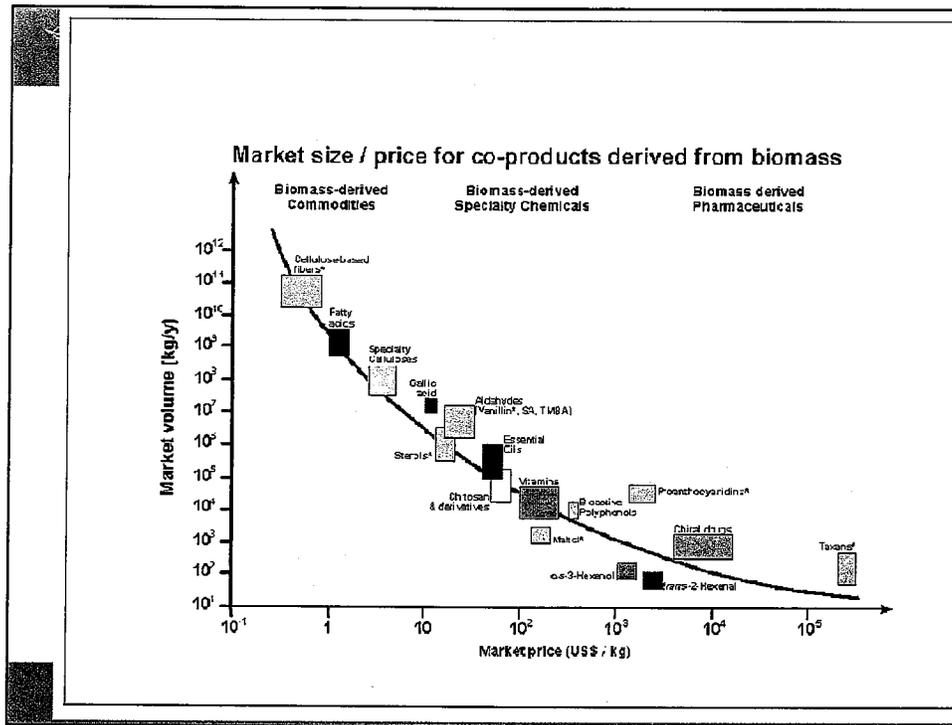
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Products

Large market opportunities

<h3><u>Commodity Chemicals</u></h3> <ul style="list-style-type: none"> • \$110B in 2025 <ul style="list-style-type: none"> – Levulinic Acid Market: 4.8 million tons/yr for \$18 billion – Precursor for thousands of end products • Sale requires: <ul style="list-style-type: none"> • Proof of quality (analytical test) • Customer test 	<h3><u>Liquid Fuels</u></h3> <ul style="list-style-type: none"> • \$140B in 2016, 16% CAGR <ul style="list-style-type: none"> • 14B gallons of EtOH • 13B gallons of Biodiesel • Sale requires: <ul style="list-style-type: none"> • Extensive sampling and testing by fuel blender • Regulatory Approval
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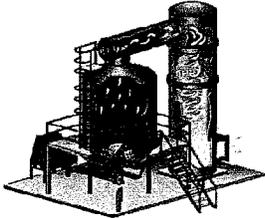
Alestron has Great Fuel Properties

- High Energy Density
 - 105 mBTU/g
 - Much better than Ethanol (75mBTU/g)
- High efficiency
- High octane (121.5) and high cetane
- Great cold flow properties
 - Low viscosity, low freeze point and lowers the cloud point of diesel blends

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The Competition

Price and Value Advantages



- Thermochemical
 - Traditionally high heat and pressure
 - Can use rare metal catalysts
 - Typically high CAPEX
- Enzymatic / Biologic
 - Long R&D cycle
 - High growth costs or limited biomass input

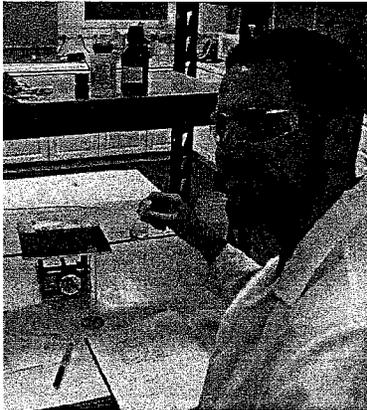


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Rapid Scaleup

3 milliliters



*Based on
Research Funded
by US Army CERL*

January 2011

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Rapid Scaleup

1000 g/yr



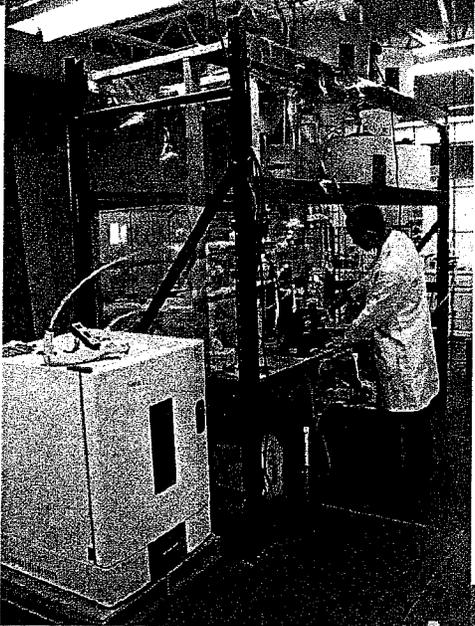
October 2011

REV. 2011.11

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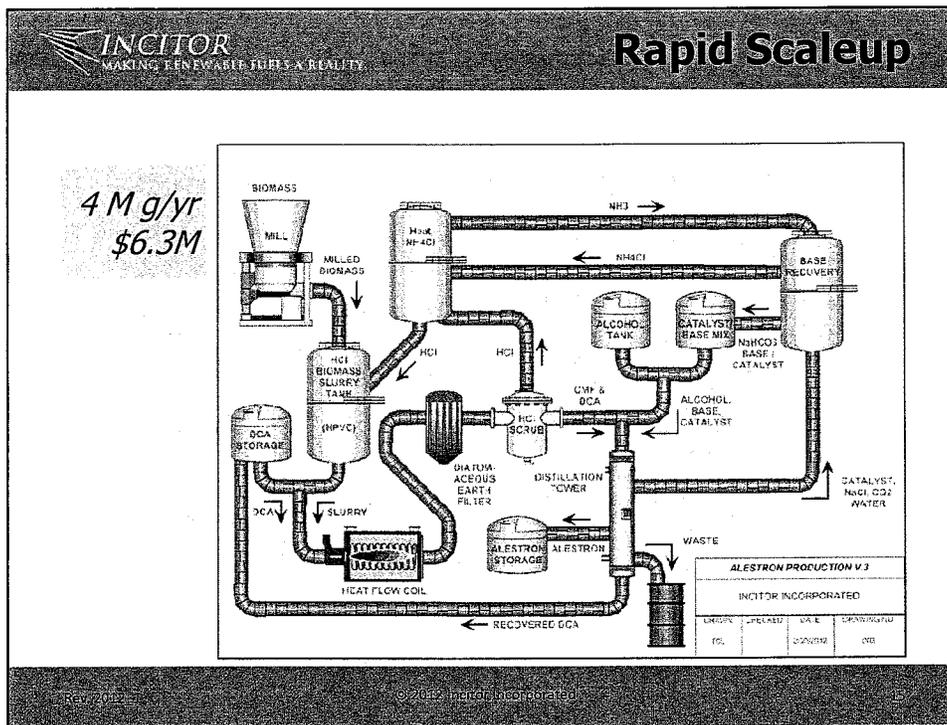
Rapid Scaleup

10,000 g/yr



July 2012

REV. 2012.07



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Financial Requirements

First Commercial Facility

- \$8.5 million to:
 - Build 8,000 MT commercial levulinate/Alestron facility
 - Potential USDA loan guarantees and other non-dilutive sources
 - \$7M USDA
 - \$2.5M New Market Tax Credits
 - Federal Grants
 - Economic Development Incentives

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Commitment to New Mexico

30 employees with first commercial facility

Albuquerque, NM:

- Headquarters since 2007 founding
- R&D and pilot facility
- 15 current employees
(2-5 addtl before commercial facility operational)

Milan, NM (near Grants):

- Supply and facility lease letter signed with Mt. Taylor Machine & Sawmill for commercial facility
- 200,000 MT/year local forest waste from the Zuni National Forest
 - Incitor's facility starts at 8000 MT/year
- 13 employees anticipated

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Wood-based Biomass



Small dimension logs (pulpwood) – Traditional users of pulpwood logs are pulp mills and the wood based panel sector. However energy companies have a high wood paying capability and are competing directly with these industries for raw material.



Chips / Sawdust – A major by-product from the sawmilling industry, and important raw material for the pulp & paper and wood-based panels sector. Now also in strong demand by wood pellet producers and energy companies. Recovery of waste wood from communities and construction/demolition is also growing in importance for the bio-energy sector.



Wood pellets – Generally made from compacted sawdust. Wood pellets are extremely dense and have a low water content, which offers logistic advantages. They are mainly used in domestic heating and co-firing plants due to their homogeneity and their high quality as wood fuel.



Bark – Has a relatively low calorific value and a high ash content and is therefore not favoured by the bio-energy industry. It is a major by-product of the softwood sawmilling industry, and often burned at sawmills to provide heat (for drying kilns) and energy.



Harvesting Residues – Tree tops and branches left behind in the forest after harvesting. It remains a largely unutilized resource in most countries and has low competition from the traditional wood consuming industries.



Experienced Leadership

Decades of high-tech development to revenue to exit

- Dr. John Elling, CEO**
 - President of Acoustic Cytometry Systems, experienced entrepreneur in scaling biotech to profitable acquisition
- Troy C. Lapsys, VP Technology, Co-Founder**
 - 15+ years high tech milestone driven development to revenue experience
- Jacob Berman, VP Business Development, Co-Founder**
 - Three decades global agribusiness sales & management experience with extensive biofuel industry contacts
- Dr. Peter Mikochik, Principal Chemist**
 - Organic & inorganic Catalyst expert with over 10 years academic & industry experience
- Aviad Cahana, P.E., Director of Engineering**
 - 10+ years experience in engineering, with particular emphasis on oil and gas environmental remediation

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Local Venture Backing

- \$2.5M Series A Round
 - \$1M Cottonwood Technologies
 - \$500k "Sidecars"
 - \$700k Sun Mountain
 - \$300k NM Angels

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