Commercializing Bio-Based Chemicals

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Chairman and CEO

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A global shift to a **bio-based** economy is currently underway.
Moving beyond petroleum
to a renewables-based, sustainable future
that ensures we leave the planet a better place for future generations
while driving economic development and a global market opportunity in excess of $500B by 2025
Global Market Drivers Advancing the Renewables Chemicals Market

- Technological
- Geo-political
- Socio-economic

Global Market Drivers
Bio-based Chemicals Value Proposition

Petroleum Consumption

Value-added:
- $385 billion
- 70.6%

Value-added:
- $375 billion
- 3.5%

Value-added:
- $135 billion
- 26%

Higher value output ($/lb. or $/gal.)
Myriant’s Bio-Based Chemicals Disrupt the Traditional Oil-to-Chemicals Value Chain

Myriant’s process:
• Utilizes renewable feedstocks that are 60% more cost effective than petro
• Sequesters CO₂, resulting in higher yields & improved carbon footprint to petro
Myriant’s Blueprint for Commercialization Success

Sugars/Biomass → Bio-Succinic Acid → Bio-Acrylic Acid → Bio-Lactic Acid → Bio-Muconic Acid

Two Chemical Plants in Production: US & EU
100% Committed Off-Take
50% Committed Off-Take for US Expansion Plant

Cost Advantaged Platform for Multiple Chemicals
Global Partners and Distributors to Accelerate Market Access
Bankable Business Model and Track Record of Execution
Clear Visibility to Cash Flow Positive - 2015
Bio-Succinic Acid “Drops-In” to Chemical Manufacturing to Replace Petroleum

**Myrian**

Bio-Succinic Acid Molecule

- High Value
- Proven Chemistry/Scale
- High Performing
- Cost Competitive
- Better Environmental Footprint
- Extensive IP

$7.5B
Succinic Acid Market

SAC Replacement
BDO
PBS

Serving Immediate Demand in Multiple Application Markets
Myriant’s Bio-Succinic Acid Value Proposition

- Bio-succinic Acid Process Has Low Greenhouse Gas Emissions
  - 94% less than petrochemical succinic acid*
  - 93% less than petrochemical adipic acid*
- Renewable Feedstocks are Cheaper and Less Volatile Than Petroleum
  - Efficient Fermentation and Downstream Processes Optimize Production Costs
- Feedstock can be sorghum (non-food) based or corn based
- Drop-in Replacement Anywhere Succinic Acid is Currently Being Used
  - Replaces petroleum based chemicals in Urethane, Plasticizer, Coatings and Polymer Applications

* Life Cycle Analysis of Bio-Succinic Acid production using the IPCC 2007 (GWP) method
Life Cycle Analysis for Myriant’s Bio-Succinic Acid

Reduced Carbon Footprint

Greenhouse gas reduction:
- 94% compared to Petro based Succinic Acid
- 93% compared to Petro based Adipic Acid

* Life Cycle Analysis of Bio-Succinic Acid production using the IPCC 2007 (GWP) method
Bio-Succinic Acid Product Performance Testing

3rd Party Independent Labs

- **COATINGS**
  - Approved ✔️

- **BIOPOLYMERS**
  - Approved ✔️

- **URETHANES**
  - Approved ✔️

- **PLASTICIZERS**
  - Approved ✔️

Independent lab verification received for each product application
Lake Providence Plant: A Model for Public-Private Partnership Success

- **First** Bio-Succinic Acid Plant in U.S.
- **30 Million Lb /Year** Commercial Plant in Lake Providence, Louisiana
- Commercial Start-Up **Q2 2013**
- Financing Plan:
  - **$50M** Grant from DOE
  - **$25M** Loan Guarantee from USDA
  - **$10 M** Louisiana Department of Transportation and Development
Lake Providence Plant: A Model for Public-Private Partnership Success

- Economic Development and Job Creation:
  - 53 Permanent Jobs
  - 480 Construction Jobs
  - >250 Indirect Jobs
2nd Plant: Leuna, Germany

Myriant’s European Innovation Hub

- Strategic Foothold to Serve EU Customers
- End-to-End Process Guarantee for US Expansion Plant
- Product for Customer Sampling
- Piloting and Scaling Capabilities for Pipeline Products
- Retrofit at Uhde’s Expense
Enabling Innovative Customer Applications For Bio-Succinic and Bio-Acrylic

### Bio-Succinic Acid

- Unique Bio-Based Label Adhesive
- Myriant Bio-Succinic Acid + Dupont Tate & Lyle’s Susterra® Propanediol
- 50% Renewable Content to Meet PET Recycling Needs

![Piedmont Chemical Industries 1, LLC Logo]

- 100% Renewable Polyester Polyols
- Myriant Bio-Succinic Acid + Dupont Tate & Lyle’s Susterra® Propanediol
- Address Growing Demand for Renewable Urethanes in Industrial Applications

### Bio-Acrylic Acid

- $15B+ market opportunity; growing at 5% - 1 new plant needed every year
- Well established market – no new application development
- To primary segments:
  - Super-Absorbent Polymers (SAP)
    - 32% of Acrylic Market
    - Fastest growing segment (5.5% annually)
  - Acrylic Esters
    - 53% of the Acrylic Market
    - Key applications in paints, coatings
Poised for Rapid Global Production and Distribution Capability

2nd U.S. Plant
- Online 2015
- 140M Lbs/Yr – 50% Under Contract
- Process Guarantee

Distribution Agreements

2nd U.S. Plant

Significant Technology and Investment Risk Mitigation; Path to Revenue Generation and Cash Flow Positive
Finance and Growth Pillars for Bio-Based Chemicals Commercialization

Process and Performance Guarantee

- Uhde ThyssenKrupp

Strong, Well-Crafted Off-Take Agreements

Committed Before Construction

Demonstrable Economics

Extensive IP

Patented Technologies

- Chemistry/Process
- Fermentation/Bioprocess
- Biocatalysts

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Strategic Partnerships Accelerate Market Access in Key Growth Geographies

**Finance/Production Partners**
- $100 M+ Investment
- Investigating MOU for Joint Venture in Southeast Asia
- MOU for 220M Lbs. Succinic Acid Plant
- 80% of Capacity Captive for BDO Production

**Technology/Integration Partners**
- Global Alliance
- Process Guarantees & EPC Wrap
- BDO Process Guarantees
- Immediate Access to 1.8B Lb. Market
- Exclusive Integrated Process

**Select Customers and Distributors**
- Succinic Acid Bio-Based Resins and Adhesives
- Succinic Acid for Bio-Based Urethanes
- Fortune 50 CPG Company
- Offtake for 3rd Commercial Product: Bio-Acrylic acid
- Distribution Agreement for Germany, Austria and Switzerland
- Exclusive Marketing Partner for Japan and Korea
- Requirements Contract Agreement; Turkey and Middle East
Blueprint for Commercialization Success

- **COMMERCIALIZED PRODUCT**
  - Expanding Global Capacity 5x by 2015

- **LARGE MARKETS**
  - Large Global Markets in Excess of $40B

- **LEADING CUSTOMERS/PARTNERS**
  - Building Demand Ahead of Capacity

- **COST/PLATFORM ADVANTAGE**
  - Robust Pipeline for Multiple Bio Chemicals

- **BANKABLE MODEL**
  - Track Record and Strong Balance Sheet to Meet Long-Term Growth
Commercializing Bio-Based Chemicals