Turning Levulinic Acid’s Potential as a Biobased Building Block into Reality

December, 2013
Renew
We believe that biobased materials are a viable alternative to petrochemicals and contribute to improving quality of life

Reinvent
Our disruptive technology will turn Levulinic Acid’s potential as a Biobased Building Block into reality

Sustain
Supporting sustainable lifestyles by transforming Levulinic Acid into high performance materials reducing toxicity, air and environmental impact

Renew.Reinvent.Sustain.Change the World™
Why Levulinic Acid?

C5 backbone:
- Feedstock for high-C products as shale economics change petrochemical supply landscape

Built-in oxygen:
- Nature provides the oxygenation steps through photosynthesis
- Low energy and favorable LCA

Dual keto-acid functionality:
- Wide range of potential derivatives to novel and existing materials
Performance and Sustainability without Compromise

Cellulosic Biomass → Levulinic Acid (LA) → Segetis Bio-based Specialty Chemicals

- Diverse, renewable feedstocks
- Thermochemical conversion
- $>50\,\text{B markets}$

Segetis Bio-based Intermediate Chemicals
Breakthrough Levulinic Acid Technology

Historical Process Not Commercially Viable

Segetis’ Proprietary Process Ready for Scale-up

<<50% yield
Inoperable

>>50% yield
Operable

Scalable, Operable & Capital-lite Process
Making Levulinic Acid a Reality – KSF’s

1. Robust, Reliable and Economic Process
2. Broad Market Opportunity
3. Feedstock Flexibility
4. Motivated Investors w/Long-term Horizon
5. Strong Upstream & Downstream Partnerships
6. Experienced & Committed Leadership Team
Robust Scalable Process with Strong Operating Experience

Segetis Pilot: >1500 hours of run time
>300m in-process data points collected

Next Step: FEL2 for 1st Commercial Facility
>$50bn Addressable Market Opportunity

- **Plasticizers**: $14bn
  - PVC & biopolymers

- **Agrochemical formulations**: $3.5bn

- **Polyester & Polyurethane Intermediates**: $7bn

- **Polycarbonate Co-Monomer**: $2bn

- **Segetis Biobased Specialty Chemicals**

- **Household & Industrial Cleaners**: $2.5bn
  - Bio-based acrylate polymers: $5bn

- **Nylon Intermediates**: $8bn

- **Other LA Derivatives**: $5bn

- **Levulinic Acid (LA)**

- **Biobased Intermediate Chemicals Partnership Opportunity**
Feedstock Flexibility for Global LA Adoption

Wide Range of Feedstock Options

<table>
<thead>
<tr>
<th></th>
<th>1st Gen Sugars</th>
<th>Cellulosic Sugars</th>
<th>Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass Capacity</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Supply Chain</td>
<td>✓</td>
<td>In development</td>
<td>Needs development</td>
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<tr>
<td>LA Conversion Validated</td>
<td>✓</td>
<td>Pilot</td>
<td>Concept</td>
</tr>
</tbody>
</table>

Lower Cost
Segetis Value Add for Upstream Partners

Assumptions:
• Corn prices based on USDA data (accessed 8/2013)

Sources
Sugar and Sweeteners Outlook, S. Haley, USDA ERS Report SSS-M-303 (Nov. 2013)

Assumptions:
• 45% yield to pulp, pulp @ $600/tonne
• 100% dry biomass utilization for wood pellets with a comparable heat value to 7750 BTU/lb, $10/MM BTU (LNG, Japan)

Wood Pellet Heating Guidebook, MA Division of Energy Resources (2007)
Market Partnerships Opens with Cost Effective LA

Seeking partner to develop bio-based intermediates

- Phthalate-free PVC
- Bio-based certification
- Easy to clean, Easy to process

Key Partners: Axiall, KemOne

Demonstration Scale

Household

- Concentrated
- Less Packaging
- Excellent cleaning

Validation partner: Method

Flexible PVC

Commercial Scale

Polyamides

Large Scale

Decreasing Cost of Levulinic Acid

Market Size
Segetis Partnership with Method – New Category

Highly concentrated
Pumpable – easy and controlled use
Excellent cleaning
Reduced packaging & shipping costs
Segetis Formulation Aids on Shelf in Cleaners

Method Detergent

Method Dishwash

In Target stores today

Seventh Generation Cleaners
Segetis Plasticizers for Flexible PVC Products

Biobased plasticizer

Axiall’s Biobased PVC Compound

Biobased flex PVC product offering

Inpro’s Wall and Door Products

Preferred Procurement

Facility Manager

Benefits through the value chain
Building A Foundation with Experienced Investors

Segetis has been backed by VC’s, Strategic and Private Equity Investors since its founding in 2007

Diverse mix of global investors
Segetis Team Brings Solid Industry Experience

The Segetis team blends experience from large, strategic chemical companies and agile start-ups

Atul Thakrar, President & CEO
ROHM and HAAS * CYTEC INDUSTRIES * SYNCRUDE

Cora Leibig, Vice President of R&D
DOW CHEMICAL

Andrew Skinner, Vice President of Operations
STARFIRE SYSTEMS * SCHENECTADY INT’L * GE

Graham Merfield, Chief Business Officer
SOLVAY * RHODIA
Segetis Highlights

Renewable Source of Chemicals Addressing $50Bn Market

Scalable Thermo-Chemical Manufacturing Process

Validation Products in Market Today: Robust pipeline