Ones to Watch
Ones to Watch

MODERATED BY
ANDREAS STUBELIUS
Portfolio Manager, Swedish Energy Agency
Investor Reviewers

STEVEN KLOOS
Partner, True North Venture Partners

TONY VAN BOMMEL
Senior Managing Partner, Industrial, Clean And Energy Technology Venture Fund, BDC Capital
Ones to Watch

NILS LEKEBERG
Founder, Enjay
$20,346,672
UNITED STATES
WHERE OTHERS SEE THIN AIR
WE DID IT!
A true paradigm shift
"The more money our customers save, the larger the environmental savings"
"We have created an economical incentive to help save the environment"
MOLLY MORSE
CEO & Co-Founder, Mango Materials
IMAGINE THE FUTURE
Better biopolymers are critical to achieving clean oceans and environment.
Global Plastics Market
740 billion lbs/yr (2016)
“There may be more plastic than fish in the ocean, by weight, by 2050” EMF
NATIONAL GEOGRAPHIC

PLANET OR PLASTIC?

18 billion pounds of plastic ends up in the ocean each year. And that’s just the tip of the iceberg.

Los Angeles Times

Berkeley goes nuclear on single-use plastic

By THE TIMES EDITORIAL BOARD | JAN 24, 2019 | 3:05 AM

Big consumer brands will start taking their packaging back
California adopts strictest methane rule in the nation

Climate change: The more we know, the worse it seems

Why cold weather doesn’t mean climate change is fake

Weather and climate aren’t the same thing, meaning you can expect harsher winters in a warming world.
We strive to be a global leader in the bio-industrial revolution by converting abundant methane gas into low-cost, high-value, biodegradable materials.
PHA biopolymer

Microbial process

Methane emissions

Waste facility

Biodegradable products
The methane from U.S. landfills can make **7 billion lbs** of Mango Materials PHA every year.
Nature’s plastic

WASHSAFE™
OCEANSAFE™
FISHSAFE™

ClimatePositive™
**PHA has Low Environmental Impact**

Unlike traditional plastics, PHA from methane can reduce greenhouse gas emissions.

**Energy (MJ/kg plastic)**

- LDPE: 83
- HDPE: 80
- LLDPE: 79
- PP: 78
- PET: 71
- PHA (glucose): 43
- PLA (Ingeo): 42
- PHA (waste methane): 37

**CO2 (kg/kg plastic)**

- PHA (glucose): 2.6
- PET: 2.19
- LDPE: 1.87
- HDPE: 1.8
- LLDPE: 1.79
- PP: 1.63
- PLA (Ingeo): 1.24
- PHA (waste methane): -6.06

- PHA requires much less energy than traditional plastics.
- PHA from waste methane can be carbon negative!
1. Sale of end product

Methane producer partnership

Powered by MANGOMATERIALS™

Sale by Brand Owner

2. Licensing fee

3. Bacteria & media supply
Up-Scaling

Bench scale ✓

Pilot ✓

Launch Facility ✓

Commercial Full-Scale ✓
In the words of our customer:

Finally an environmentally-oriented company designed for me. It understands my need for inspiration from nature. It respects my beliefs and cares about the details. It knows that environmental justice and peace of mind are important to me.
Compostables & Biodegradables are the answer

2 weeks, aerobic compost, PHA fibers
Where scientific innovation meets environmental justice.
For further information

Molly Morse
CEO

Molly@mangomaterials.com
Ones to Watch

DAVID SNYDAKKER
CEO, Lilac Solutions
lithium extraction from brine resources

Dave Snydacker, Chief Executive Officer

January 2019

dave@lilacsolutions.com | 401-714-7906
Lithium is the New Gasoline

Electric Vehicle Sales

Battery Pack Prices

Sales (thousands)

- Europe
- North America
- Asia
- Rest of World

Price ($/kWh)

- '10
- '11
- '12
- '13
- '14
- '15
- '16
- '17
Electric Vehicles are Transforming the Lithium Market

Lithium Price Index

With only 2% EV market penetration today, lithium price has nearly tripled.

Lithium Cost Percentage in Lithium-Ion Cell

Manufacturing costs dropping, raw materials becoming more important.

Lithium Demand Growth:

4x by 2028

40x for 100% EVs
Lithium has a unique position on the periodic table. Hydride, sodium, and magnesium batteries cannot compete for vehicles or portable electronics.

Next-generation batteries use even more lithium. Silicon and lithium metal anodes increase energy density, but also increase lithium usage per kWh.

Lithium Cannot Be Replaced in Batteries
Lithium Extraction from Brines

Conventional Process: Evaporation Ponds
- Brine Resource
- Evaporation Ponds
- Mg/Ca removal
- lime
- boron removal
- LiCl
- Processing Time: 2 years
- Lithium Recovery: 50%
- Accessible Resources: ≥ 500 ppm Li

Lilac's Process: Proprietary Ion Exchange
- Brine Resource
- LiCl
- HCl
- Processing Time: 2 hours
- Lithium Recovery: 90%
- Accessible Resources: ≥ 50 ppm Li

<table>
<thead>
<tr>
<th></th>
<th>CONVENTIONAL</th>
<th>LILAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation Ponds</td>
<td>Large Capex</td>
<td>None</td>
</tr>
<tr>
<td>Processing Time</td>
<td>2 years</td>
<td>2 hours</td>
</tr>
<tr>
<td>Lithium Recovery</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td>Accessible Resources</td>
<td>≥ 500 ppm Li</td>
<td>≥ 50 ppm Li</td>
</tr>
</tbody>
</table>
Lilac’s Ion Exchange Technology

**Intellectual Property**
- Ion exchange beads absorb lithium
- Six filings on materials, beads, systems

**Exceptional Performance**
- High selectivity for lithium vs Na, Mg, etc
- Stable performance for 100’s of cycles
- Yields high-purity lithium concentrate
- Efficient path to battery-grade products
Life of Mine Model: Argentina

Conventional Project

- Long development time (5-10 years)
- Low lithium recovery (40%)
- High cutoff grade (500 mg/L)
- OPEX: $4,500/tonne-LC
- Annual production 7,000 tons

<table>
<thead>
<tr>
<th>IRR</th>
<th>Unlevered Pre-Tax</th>
<th>Unlevered After-Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14%</td>
<td>11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NPV</th>
<th>10% Discount</th>
<th>20% Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlevered Pre-Tax</td>
<td>$25mm</td>
<td>($39mm)</td>
</tr>
<tr>
<td>Unlevered After-Tax</td>
<td>$21mm</td>
<td>($66mm)</td>
</tr>
</tbody>
</table>

Lilac Project

- Rapid development time (1-2 years)
- High lithium recovery (90%)
- Low cutoff grade (100 mg/L)
- OPEX: $2,600/tonne-LC
- Annual production 25,000 tons

<table>
<thead>
<tr>
<th>IRR</th>
<th>Unlevered Pre-Tax</th>
<th>Unlevered After-Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>99%</td>
<td>72%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NPV</th>
<th>10% Discount</th>
<th>20% Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlevered Pre-Tax</td>
<td>$1,900mm</td>
<td>$780mm</td>
</tr>
<tr>
<td>Unlevered After-Tax</td>
<td>$1,400mm</td>
<td>$530mm</td>
</tr>
</tbody>
</table>
Expanding Lithium Production from Brines

Expanding Existing Projects

South American Brine Resource

Existing Reserves
New Reserves with Lilac Technology

Accessing New Resources

Lilac enables lithium producers to quickly bring online new supply from abundant brine resources.
# Competitors: Brine to Hydroxide

<table>
<thead>
<tr>
<th>Accessible Resources</th>
<th>Cost / Ton LiOH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abundant</td>
<td>$3,000</td>
</tr>
<tr>
<td>High Li</td>
<td>$4,700</td>
</tr>
<tr>
<td>High Li</td>
<td>$6,300</td>
</tr>
<tr>
<td>Low Mg</td>
<td>&gt; $6,000</td>
</tr>
</tbody>
</table>

- **Li-lac solutions**
  - (evaporation ponds)
- **ALBEMARLE®**
  - (evaporation ponds)
- **FMC**
  - (alumina absorbents)
- **tenova**
  - (solvent extraction)
**Business Model**

**2018+**
**Engineering and Pilots**

- Engineering and Pilot Projects
- Brine Companies

**2020+**
**Commercial Operations**

- Design, Build, Operate, and Bead Supply
- EPC Contractor
- Balance of Plant
- Brine Companies

**2022+**
**Lithium Producer (Optional)**

- Brine Companies
- Brine
- Lithium Chemicals
- Battery Makers

- EPC Contractor
- Balance of Plant
### Business Development Highlights

**West Utah**
- Established brine project
- Operating for 100 years
- Selected Lilac after two-year search for lithium extraction technology
- Phase 1: Successful
- Pilot: Expected 2019

**East Utah**
- New lithium project
- High degree of difficulty
- Collaboration with top engineering firm for bromine extraction
- Phase 1: Ongoing
- Pilot: Expected 2019

**Argentina**
- New lithium project
- Very large resource
- Inaccessible with conventional technology; highly attractive for Lilac
- Phase 1: Ongoing
- Pilot: Expected 2019

**Hatch Engineering**
- Top-tier global mining engineering firm
- Lilac-Hatch MoU: collaboration to design and build projects (Sep 2018)
## Fundraising and Revenue

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020+</th>
<th>2022+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financing Round</strong></td>
<td>Seed</td>
<td>Pre-A</td>
<td>Series A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financing Amount</strong></td>
<td>$800k</td>
<td>$2.5mm</td>
<td>$10mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project Launch</strong></td>
<td>Demos</td>
<td>Engineering</td>
<td>Pilots</td>
<td>Commercial</td>
<td>Project Dev.</td>
</tr>
<tr>
<td><strong>Revenue per project</strong></td>
<td>$50-100k</td>
<td>$1-5mm</td>
<td>5 - 50 $mm / yr</td>
<td>0.1 - 1.0 $bn / yr</td>
<td></td>
</tr>
</tbody>
</table>

### Press Coverage

- MINING.com
- EL PAÍS
- Design News
- gtm:
- FAST COMPANY
- VERGE
- Clean
- Technica
Alex Grant  
VP of Technology  
Northwestern MS

Dave Snydacker  
CEO  
Northwestern PhD

Nick Goldberg  
COO  
NYU Law

Alex Grant  
VP of Technology  
Northwestern MS

Dave Snydacker  
CEO  
Northwestern PhD

Nick Goldberg  
COO  
NYU Law

Alex Gershanov  
Process Engineer  
McGill BS

Aidan Mouat  
CEO  
Hazel Technologies

Amos Indranada  
Materials Engineer  
UC Berkeley BS

Matt Goldberg  
COO  
NYU Law

Alex Gershanov  
Process Engineer  
McGill BS

Aidan Mouat  
CEO  
Hazel Technologies

Dennis Neymit  
Process Engineer  
UCSB BS

actively seeking gender and ethnic diversity

Advisors

WSGR  
law firm

David Deak  
Frmr Lithium Exec  
Frmr Tesla Lithium

Chris Berry  
Lithium Market Analyst  
House Mountain Partners

Peter Bryant  
Mining Strategist  
Clareo

Aidan Mouat  
CEO  
Hazel Technologies

Partnership with WSGR law firm  
actively seeking gender and ethnic diversity
Ones to Watch

JOSH WEISMAN
VP Sales, Scoop Technologies
Laying the Foundation for a Shared, Sustainable Commute

Josh Weisman, Vice President of Sales
SOV commuters

100M+
100M+ SOVs

500+

trips per year
one way solo commute trips
Commutes are getting longer and more painful

The commute is the lowest daily satisfaction activity

- **Recruitment:**
  - 75% considered the commute when they chose their job.

- **Job Satisfaction:**
  - 48% say the commute has a significant impact on job satisfaction.

- **Pay vs. Commute:**
  - 85% of professionals would take a pay cut for a shorter commute.

Average US travel time to work, 1980-2017


Lots of innovation in shared modes and networks

- Dynamic Carpooling
- Bikes / E-Bikes
- Scooters
- Microtransit
- Vanpooling
Different modes have different sweet spots

- <5 miles
- 5-50 miles
- 50+ miles
Perception: Three barriers to “traditional” carpooling

- **55% Schedule concerns**
  - “Do I have to go every day?”
  - “Who is on my schedule?”

- **26% Matching challenges**
  - “Who will ride? Who will drive?”
  - “When do I pick up my carpooler?”

- **19% Ongoing management**
  - “Exchanging money is awkward.”
  - “This is going to take time to plan.”
Convenient and enjoyable carpooling

Scoop is a convenient and enjoyable way to carpool with co-workers and neighbors.

Download on the App Store

GET IT ON Google Play
Our mission

Bring commuters together in carpools they’ll love by partnering with their employers across the country.
The Scoop app + the Managed Carpool Program

The Scoop App

- A dynamic, trip-by-trip app built for commuters

The Managed Carpool Program for Employers

- Implementation & Marketing Support
- Program Management
- Reporting and Insights
## Huge benefits to key people metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td>50%</td>
</tr>
<tr>
<td>50% say Scoop helps them be more productive and energized at work</td>
<td></td>
</tr>
<tr>
<td><strong>Save Time</strong></td>
<td>72%</td>
</tr>
<tr>
<td>72% say Scoop saved them time on their commute</td>
<td></td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td>92%</td>
</tr>
<tr>
<td>92% say Scoop enabled them to network &amp; exchange ideas with co-workers</td>
<td></td>
</tr>
<tr>
<td><strong>Retention</strong></td>
<td>70%</td>
</tr>
<tr>
<td>70% say Scoop increases likelihood to stay at employer</td>
<td></td>
</tr>
</tbody>
</table>
Scoop makes carpooling work at scale

4M  Trips taken

68M  Miles shared

62M  lbs CO₂ reduced
Josh Weisman
Vice President of Sales
Scoop Technologies, Inc.
josh@takescoop.com
www.takescoop.com/partners