Session Sponsors:

biosynthetics round table
October 22, 2018

Brad Boren,
Director of Innovation & Sustainability, Norrøna

Sophia Opperskalski,
Fiber and Materials Specialist, Textile Exchange

Sandra Bohne,
Volunteer, Textile Exchange
Chatham House Rule

"When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed".

Source: http://www.chathamhouse.org/about/chatham-house-rule/chatham-house-rule-rule-translations
Textile Exchange describes “preferred” as:

A fiber, material or product that is ecologically and/or socially progressive: One that has been selected because it has more sustainable properties in comparison to other options.

What makes a fiber/material preferred?

- A recognized industry **standard** in place that confirms its status as preferred.
- **Sustainability criteria developed** through a formalized multi-stakeholder process.
- Objectively tested or verified as having **superior sustainability attributes**, such as through a peer-reviewed Life Cycle Assessment (LCA).
Agenda

13:30  WELCOME
Brad Boren, Director of innovation and Sustainability, Norrøna | Biosynthetics Working Group Chair

13:45  STAKEHOLDER SURVEY
WHAT YOU TOLD US...
Results from the first comprehensive stakeholder survey on biosynthetics and the textile industry – based on over 130 survey participants.

Sandra Bohne, Volunteer Textile Exchange

14:15  FEEDSTOCKS
GETTING DOWN IN THE WEEDS ...
All you ever wanted to know about bio based feedstocks (such as crops, biomass, and caster) for biosynthetic textiles, how to measure impact, and what the future holds.

PANELISTS:
Federica Zanetti, Assistant Professor, University of Bologna
Bob Rozmiarek, Senior Director, Business Analysis and Strategy, Virent
Ralph Lerner, Senior Director of Business Development, Virent
Marc Binder, VP Sustainable Services, thinkstep
Agenda

15:15  FIBER

FIBER LAB
Touch and feel products made from biobased (or part biobased) feedstocks including Sorona® (bioPTT) from Dupont, EVO® (bio PA) from Fulgar, biopolyester (based on bio PX produced by Virent), synthetic spider silk and more!

Q&A WITH THE EXPERTS, INCLUDING:
Ding Hao, Business Development & Technical Sales Manager EMEA, Dupont
Jamie Bainbridge, VP Product Development, Bolt Threads
Ralph Lerner, Senior Director of Business Development, Virent
Andrea Lorenzetti, Sales Manager, Fulgar
Alex Panizzon, Industrial Manager, Fulgar
Les Jacques, Invista

15:45  REFRESHMENT BREAK

WORKING SESSIONS

16:15  THE NEXT 5-10 YEARS – WHERE DO WE WANT TO BE?
What does the future hold for biosynthetics? Where is the technology, policy, R&D, and market taking us?

16:45  THE NEXT YEAR – WHERE TO FOR THE WORKING GROUP IN 2019?
You’ve told us what you want through various mediums, including market-segment focus groups, and the 2018 consultation survey, now it’s time to set the agenda in motion for 2019.

17:20  WRAP UP

17:30  CLOSE
A biosynthetic material consists of polymers made either wholly or partly from renewable resources, for manufacture into synthetic fibers.
BACKGROUND

• Represented by 47 companies within the outdoor, athletic, footwear, fashion & home textile industries as well as chemical, fiber and material suppliers.
• Meets virtually every quarter, with additional in-person and focus group meetings as needed

SHORT TERM GOALS

• To be determined by today's round table and first session of the working group combine with feedback from the 2018 biosynthetic industry survey

ACTIONS FROM 2018

1. Better understand the benefits/challenges and needs of the industry regarding biosynthetic materials.
   a) Two physical meetings
      I. Outdoor/Sports based
      II. Fashion based
   b) Create industrywide Survey

2. Preparation for Biosynthetic Round Table in Milan, 22nd October 2018

3. Metrics and potential fit with Higg Index
KEY OBJECTIVES FOR TODAY

• Learn more about feedstock challenges and opportunities
• See examples of current biosynthetic materials
• Work together to bring positive change and promote future business.
  • What is our perfect feedstock solution and how do we move towards it in a commercially viable way?
  • What is required for retailers, brands and consumers to believe biosynthetics are a preferred fiber?
  • How shall we work together towards success?
138 Participants

- Brand / Retailer
- Supplier
- Consultancy
- Other (incl. NGO, Certification Body, Research, Investor)
Biosynthetics Stakeholder Survey Results
13:45-14:15

13:45-14:00  Review of Results
14:00-14:15  Questions & Answers on Results

Sandra Bohne:  Volunteer Textile Exchange
Sophia Opperskalski:  Fiber and Materials Specialist, Textile Exchange
How important are biosynthetic textiles to your business?

- Core to our business
- Very important
- Increasingly important
- We are interested in biosynthetics and want to find out more
- Not very important yet but could be in the future
- Biosynthetics are not important to our business and doubt they ever will be
- Other
- No response

Brands and Retailer vs. Supplier
What biosynthetic products does your company currently source, produce or supply? and aspire in the future?

Brands and Retailer

- Other (material from a...)
- Biobased nylon (bPA)
- Biobased polyester (bPET)
- PLA
- Other biosynthetic
- Synthetic spider silk
- Biobased polyester (bPPT)
- Not applicable
- Not sure
- No response

Supplier

- Other (material from a...)
- Biobased nylon (bPA)
- Biobased polyester (bPET)
- Biobased polyester (bPPT)
- PLA
- Other biosynthetic
- Synthetic spider silk
- Not applicable
- Not sure
- No response
What benefits do you attribute to biosynthetics?

- Reduced dependency on fossil fuels
- Comes from a more sustainable feedstock
- Based on natural/biological inputs
- Lower carbon footprint
- Biodegradability
- Help address climate change
- Recyclability
- Part of the bioeconomy
- Other
- No Response

Brands and Retailer  Supplier
What feedstocks form the base of your biosynthetic products?

- Not sourcing/producing biosynthetic products yet
- Non-GMO agricultural crops
- By-products (e.g. of crops or forests, etc)
- Waste from food
- Other renewable resource (e.g. castor plant, fungus,...)
- Crops grown to a sustainability standard
- Genetically modified (GMO) agricultural crops
- Laboratory-based (e.g. use of algae, bacteria)
- Other
- Not sure
- No response

Brands and Retailer vs Supplier
What feedstocks would you like to see more commercially available within the next 5 years?

- Waste from food
- By-products (e.g. of crops, forests, etc)
- Laboratory-based e.g. synthetic spider silk, algae, bacteria
- Other laboratory-based (e.g. use of algae, bacteria)
- Feedstocks from other bio/renewable materials
- Crops grown to a sustainability standard
- Non-GMO grown agricultural crops
- Use of synthetic biology
- Genetically modified (GMO) agricultural crops
- Other (please provide details below)
- Not sure
- No response

[Bar chart showing percentages for each category]
What are the biggest challenges or barriers to producing/sourcing biosynthetics?

- Availability
- Verification/traceability
- Lack of data demonstrating sustainable advantage
- Feedstock sustainability/social parameters
- Sustainability standards do not exist
- Unsure what to ask for/where to source
- Price
- Quality
- Use of GMOs in feedstock production
- Demand from customers
- Ability to influence suppliers/clients
- Lead times
- Other
- Not sure

Includes only the answers of 51 brands and retailer (9 did not respond to this question)
Includes only the answers of 30 supplier (10 did not respond to this question)
What do you see as the biggest barriers to growth in the biosynthetics market generally?

- Lack of knowledge/understanding
- Lack of sustainability standards
- Commercial availability
- Price
- Demand from customers
- Use of GMOs
- Quality
- Lead time
- Not sure
- Other
- No response

Brands and Retailer vs. Supplier
What do you consider a feasible price upcharge for biosynthetics in general compared to conventional synthetics of the same quality?

<table>
<thead>
<tr>
<th>Category</th>
<th>&gt; + 50%</th>
<th>+ 40%</th>
<th>+ 30%</th>
<th>+ 20%</th>
<th>+ 10%</th>
<th>Cost parity</th>
<th>- 10%</th>
<th>- 20%</th>
<th>- 30%</th>
<th>- 40%</th>
<th>&gt; - 50%</th>
<th>N.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetically modified (GMO) agricultural crops</td>
<td>1%</td>
<td>4%</td>
<td>0%</td>
<td>7%</td>
<td>12%</td>
<td>39%</td>
<td>7%</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>26%</td>
</tr>
<tr>
<td>Non-GMO grown agricultural crops</td>
<td>1%</td>
<td>1%</td>
<td>7%</td>
<td>14%</td>
<td>26%</td>
<td>34%</td>
<td>0%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>By-products (crops, forestry, etc)</td>
<td>0%</td>
<td>3%</td>
<td>4%</td>
<td>14%</td>
<td>27%</td>
<td>34%</td>
<td>8%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Crops grown to a standard/sustainability initiative</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
<td>19%</td>
<td>30%</td>
<td>26%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Waste from food</td>
<td>4%</td>
<td>0%</td>
<td>1%</td>
<td>17%</td>
<td>22%</td>
<td>33%</td>
<td>7%</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>9%</td>
</tr>
<tr>
<td>Other bio/renewable materials</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>17%</td>
<td>25%</td>
<td>31%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>18%</td>
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<tr>
<td>Synthetic spider silk</td>
<td>6%</td>
<td>6%</td>
<td>9%</td>
<td>23%</td>
<td>20%</td>
<td>19%</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td>Laboratory-based biosynthetics (algae,bacteria)</td>
<td>3%</td>
<td>1%</td>
<td>6%</td>
<td>28%</td>
<td>26%</td>
<td>22%</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
<td>22%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>63%</td>
</tr>
<tr>
<td>Not sure</td>
<td>13%</td>
<td>0%</td>
<td>0%</td>
<td>6%</td>
<td>0%</td>
<td>19%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>63%</td>
</tr>
</tbody>
</table>
If you are currently selling biosynthetics, which customer category is your biggest volume and where do you see the greatest opportunity for growth?

- Outdoor apparel
- Women's fashion
- Men's fashion
- Sports apparel
- Kidswear
- Home textiles (incl. flooring)
- Footwear
- Other (e.g. Car industries, workwear, bags and accessories, duvets)
- Not applicable

Currently: includes only the answers of 78 participants (60 did not respond to this question)
Future: includes only the answers of 87 participants (51 did not respond to this question)
Feedstock  
14:15-15:15

GETTING DOWN IN THE WEEDS …
All you ever wanted to know about bio based feedstocks (such as crops, biomass, and caster) for biosynthetic textiles, how to measure impact, and what the future holds.

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Bob Rozmiarek, Senior Director, Business Analysis and Strategy, Virent
Ralph Lerner, Senior Director of Business Development, Virent
Feedstocks
14:15-15.15

GETTING DOWN IN THE WEEDS …
All you ever wanted to know about bio based feedstocks (such as crops, biomass, and castor) for biosynthetic textiles, how to measure impact, and what the future holds.

PANELISTS:

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Ralph Lerner, Senior Director of Business Development, Virent
Marc Binder, VP Sustainable Services, thinkstep
CASTOR
A sustainable raw material for bio-based synthetic polymers

Federica Zanetti & Andrea Monti
University of Bologna
Distal
Castor an ancient crop

Belonging to the *Euphorbiaceae* family, castor owns an ancient story dated back to 6000 B.C. in Egypt, where it was well known as a medicinal plant as described in the “Ebers papyrus.”
Castor a NON-FOOD crop

- The presence of ricine in the seed excludes any possible food application of castor seeds
- When oil is extracted ricine stays with the cake
- Several technological procedures have been patented to inactivate ricine in castor cake
- Castor oil has a unique composition: >90% ricinoleic acid (hydroxy FA)
Castor is a suitable crop for Mediterranean farming systems.
Large diversity in castor plant habitus

The availability in the market of new semi-dwarf castor hybrids expands the range of cultivation are of the crop and makes it more suitable to typical agricultural mechanization systems.
Castor is a low input crop

- Low irrigation needs
- Low pesticides/herbicides needs
- Low fertilization need
- Castor is very effective in controlling soil nematodes (i.e. cotton, sugarbeet, soybean nematodes)
- High productivity: new hybrids can yield up to 2 t/ha of seeds (under rainfed conditions) with 50% oil in the seeds and 90% ricinoleic acid in the oil. It is possible to yield about 900 kg/ha of ricinoleic acid per year.
Castor-based polymer with an ancient story

✓ 1942 castor based polymer was firstly synthesized
✓ Rilsan® was out in the market in 1949
✓ Its initial applications were in the textile industry (bathing suits, socks, etc)
✓ With the help of massive advertising, the product became as popular as nylon, its main competitor
Castor in a feasible and sustainable crop for Europe

✓ The possible development of castor production in Europe will permit the **full traceability** of the production system

✓ Production protocols could be agreed with farmers in order to get certified seeds, even organic castor could be easily grown

✓ What is missing?
  ✓ The full mechanization of the cultivation phase from sowing to harvest
  ✓ Castor myth to dispel (it is dangerous, it is a poison)
  ✓ A EU-based industry able to directly use raw castor oil
  ✓ ...?
Questions???

Federica Zanetti
DISTAL
Università di Bologna
federica.zanetti5@unibo.it
Feedstocks for Production of Bio Synthetic Fibers

Ralph Lerner, Senior Director Business Development
Bob Rozmiarek, Senior Director Business Analysis and Strategy
Virent: Bio Based Feedstocks to Direct Replacement Chemicals and Fuels

- Based in Madison, Wisconsin, USA
- Wholly owned subsidiary of Marathon Petroleum Corp.

- Chemical raw materials (paraxylene, benzene) for production of bio-polyester and nyons
- Bio-fuels (gasoline, jet, diesel)
Today’s Discussion

Bio Based Feedstock Options for Production of Bio-Synthetic Fibers - Perspective of a Technology Developer.

- **Virent Perspective:**
  - We are a technology developer focused on making a bio-based process work economically at commercial scale
  - We have evaluated many bio-based sugar feedstocks from various sources
  - Experienced with bio-paraxylene (for bio polyester) and bio benzene (for nylon)
  - Will share our perspectives on pros and cons of different feedstocks
  - **Every choice has trade-offs!**

- **What We Are Not:**
  - Agricultural experts
  - Experts in every bio based technology process
  - A producer of downstream products
Fossil Based Supply Chain: Established, Very Large Scale

RIL starts first phase of para-xylene plant at Jamnagar

Reliance Industries's 2.2 MMTPA para-xylene plant in Jamnagar is built with technology from BP PLC, its partner in KG-D6 basin.

The Corpus Christi plant's planned PET capacity is 1.1m tonne/year, and planned PTA capacity is 1.3m tonne/year.

Fossil Feedstocks → Conversion Processes → Fossil Raw Materials → Final Products

Crude Oil
Natural Gas
- Large markets
- Easy to transport
- Relatively easy to convert

Refining and Petrochemical Technologies
- Large scale plants
- Established technologies
- Decades of optimization

Olefins
Aromatics
Polymers
- Large scale plants
- Established supply chains, technologies
- Decades of optimization

Textiles
Yarns
Fabrics

BP STARTS UP WORLD'S LARGEST PTA PRODUCTION UNIT

The completed Phase 3 plant, with a design production capacity of 1.25 million metric tons per year (m.t./yr), is said to be the world’s largest single-train PTA unit.
Bio-Based Supply Chain: Developing, New Technologies

Bio-Based Feedstocks → Conversion Process Technology → Bio-Based Raw Materials → Bio-Based Final Products

Questions and Considerations

- Commercial availability
- Quality
- Volume
- Costs
- Life Cycle Analysis and other Sustainability Certification

- Commercial readiness
- Smaller scale (vs. fossil based)
- Cost (capital, operating)
- Life Cycle Analysis and other Sustainability Certification

- ‘Drop-in’ or new material Cost
- Bio-Integrity Scale match to existing assets
- End of Life – recyclable?
1st Generation Crops (Corn, Cane, Beet)

- Commercially available in large quantities
- Consistent quality
- Enables large scale bio-based commercial units
- Economical supply chain
- Agricultural impact and Life Cycle Analysis – varies depending on crop and geography
- GMO/Non GMO – does not impact conversion technology. Availability varies by crop, geography.
Corn – 1st Generation Crop

• Largest production areas:
  • United States, China, Brazil, Argentina

• Main products
  • Starch
  • Glucose and high fructose syrups
    • Ethanol, lactic acid and other bioproducts
  • Protein animal feeds
  • Oil

2018/2019 Corn Production

Average products from a bushel of corn wet milled (wt% dry basis)

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch</td>
<td>66%</td>
</tr>
<tr>
<td>Corn Gluten Meal</td>
<td>26%</td>
</tr>
<tr>
<td>Corn Gluten Feed</td>
<td>5%</td>
</tr>
<tr>
<td>Corn Oil</td>
<td>3%</td>
</tr>
</tbody>
</table>

Simplified wet mill

Steeping

Grinding and Separation

H₂O

Corn Oil

Germ

Fiber

Protein

Feed products

Starch

Sugars & Sweeteners

Source: USDA

https://apps.fas.usda.gov/ftyonline
Sugars – 1st Generation Crops

• Sugar Cane
  • Largest production areas:
    • Brazil, India, Thailand, China
  • Main products
    • Raw cane
      • ~70% water
      • ~30% dry substance
        • 15% cane juice (~13% sucrose)
        • 15% Fiber
    • Sucrose – Raw or refined white sugar or converted to ethanol
    • Molasses
    • Bagasse – used for steam/power, animal feed, other

• Sugar Beet
  • Largest production areas:
    • France, Russia, Germany, US
  • Main products
    • Raw Beet
      • ~75% water
      • ~25% dry substance
        • 20% Beet Juice (~17.5% Sucrose)
        • 5% Beet marc (2.4% pectin)
    • Sucrose – Refined white sugar
    • Molasses
    • Pulp – animal feed, other

Total World Sugar Production ~190 million tonnes
# TextileExchange18

## Biomass Building Blocks

### Background

**Graphic from:** A perspective on bioethanol production from biomass as alternative fuel for spark ignition engine  A. H. Sebayang

**Composition from:** Pretreatment of Lignocellulosic Biomass for Biofuel Production Bajpai, P. 2016

<table>
<thead>
<tr>
<th>Biomass Type</th>
<th>Cellulose (%)</th>
<th>Hemicellulose (%)</th>
<th>Lignin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardwoods</td>
<td>40-55</td>
<td>24-40</td>
<td>18-25</td>
</tr>
<tr>
<td>Softwoods</td>
<td>45-50</td>
<td>25-35</td>
<td>25-35</td>
</tr>
<tr>
<td>Wheat Straw</td>
<td>30</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>Corn Cobs</td>
<td>45</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Grasses</td>
<td>25-40</td>
<td>35-50</td>
<td>10-30</td>
</tr>
</tbody>
</table>

*Note inorganics and other minor constituents vary by biomass type.*
2nd Generation Biomass/Waste

- Includes agricultural waste and by-products (corn stover, sugar cane bagasse); wood; municipal solid waste
- In technology developmentSCALE up stage (as sugars feedstock)
- Challenges to break down and process
  - solids handling
  - higher levels of contaminants, by-products
- Smaller scale bio-based production plant options
  - economic limitations on feedstock transport
- Uncertain economics
  - need to consider feedstock, transport, conversion and capital costs
- Favorable on Life Cycle Analysis and other sustainability criteria
Some Final Thoughts

- Many options for bio-based feedstocks – all involve different choices on factors that can vary by geography, such as: commercial availability, volume and scale, cost, sustainability metrics, impact on conversion technology

- No perfect choice – all require trade-offs

- Know the questions to ask suppliers and technology developers, and understand implications of choices
Thank you

Virent Contacts:
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www.virent.com

Bob Rozmiarek
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GETTING DOWN IN THE WEEDS ...

Marc Binder
thinkstep AG
Life Cycle Thinking - approaches

Circularity Index (Circular Economy)

LCA (Life Cycle Assessment)
- multiple potential impacts including carbon & water footprint
## Tendencies - renewable vs. fossil products

<table>
<thead>
<tr>
<th>Category</th>
<th>Trend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Warming</td>
<td>Up</td>
<td>CO₂-neutral resource (process energy may be fossil)</td>
</tr>
<tr>
<td>Energie demand fossil</td>
<td>Up</td>
<td>Correlation with GWP (often more total energy needed)</td>
</tr>
<tr>
<td>Photosmog</td>
<td>Up</td>
<td>Tendency to save fossil conversions → save HC emissions</td>
</tr>
<tr>
<td>Acidification</td>
<td>Down</td>
<td>Tendency disadvantage, fertiliser use</td>
</tr>
<tr>
<td>Eutrophication</td>
<td>Down</td>
<td>Tendency disadvantage, fertiliser use</td>
</tr>
<tr>
<td>Ecotoxicity</td>
<td>Up</td>
<td>Less conventional substances used and dispersed in processing vs. substance use in biomass production (agro chemicals), very product specific, very biomass specific</td>
</tr>
<tr>
<td>Humantoxicity</td>
<td>Up</td>
<td>Tendency advantage, less fossil energy supply and less combustion processes (e.g. coal,...)</td>
</tr>
<tr>
<td>Water</td>
<td>Down</td>
<td>Agricultural products tend to use much water</td>
</tr>
</tbody>
</table>
Fiber/Fabric
15:15-15:45

FIBER LAB
Touch and feel products made from biobased (or part biobased) feedstocks including Sorona® (bioPTT) from Dupont, EVO® (bio PA) from Fulgar, biopolyester (based on bio PX produced by Virent), synthetic spider silk and more!

Q&A WITH THE EXPERTS, INCLUDING:

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Ralph Lerner, Senior Director of Business Development, Virent
Ding Hao, Business Development & Technical Sales Manager EMEA, Dupont
Jamie Bainbridge, VP Product Development, Bolt Threads
Les Jacques, Invista
Refreshment Break
15:45-16.10

Please take the time to touch and feel the materials during break.

Photo: Federica Zanetti
Introduction to the Working Session # 1

16:15-16:25

16:15-16:20  Claudia Richardson-Patagonia
16:20-16:25  Mattias Bodin-H&M

THE NEXT 5-10 YEARS – WHERE DO WE WANT TO BE?
Working Session # 1
16:25-16:55

THE NEXT 5-10 YEARS – WHERE DO WE WANT TO BE?

• What does the future hold for biosynthetic fibers/fabrics?
• Where is the technology, policy, R&D, and market taking us?
Working Session # 2
16:55-17:25

16:55-17:10  Roundtable Discussion
17:10-17:25  Compare to Survey & Summarize

16:55  THE NEXT YEAR – WHERE TO FOR THE WORKING GROUP IN 2019?
You’ve told us what you want through various mediums, including market-segment focus groups, and the 2018 consultation survey, now it’s time to set the agenda in motion for 2019.
Given there are always limited resources, what should the Biosynthetics Working group prioritize?

- Research/assess the sustainability attributes
- Come to a definition for preferred biosynthetics
- Create a resource directory to help companies find suppliers
- Develop a guidance for assessing sustainability criteria
- Support the industry through case studies + webinars
- Further educate industry on the risks of current feedstocks
- Further investigate sustainability beyond feedstocks
- Explore the need for an industry standard
- Broaden the scope of the topic
- Develop communications aimed at the consumer
- Other

Score

Brands and retailer | Supplier
Wrap up
17:25-17:30
THANK YOU

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