PRACTICAL MAGIC

GENOMICS, PHENOMICS & THE NEXT GENERATION OF ADVANCED MATERIALS

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COMPOSITES INNOVATION CENTRE, FIBRECITY
Biocomposites

Composites Innovation Centre Manitoba Inc.

Innovation: FibreCITY, self-sustainable, high-throughput, comprehensive fibre grading capability

The Prairie Agricultural Fibre Characterization Industrial Technology (FibreCITY) initiative is a centre of excellence for agricultural crop grading that research and development. It involves industry through research, development and the application of practical knowledge to real-world outcomes.

The core of FibreCITY is evaluating biofibres from multiple agricultural and natural sources, beginning with rice and hemp. As a result, FibreCITY is enabling control of the quality and consistency of natural fibres to drive the industrial implementation of biocomposites.

FibreCITY’s unique nature is its integral structure: although numerous treatments are currently used for fibre-groding and characterisation, they are non-compromising, non-integrative, non-international and will fail for them achieving their full potential. FibreCITY integrates all of this equipment and is developing a robust and holistic characterisation system for reliable fibre properties and modelling, predicting and optimizing their effects downstream in industrial processes.

FibreCITY works with:

- Biofibres: We are looking at the potential of the waste to determine which are best suited to grow crops with desired characteristics such as using it or energy.
- Hemp: We are looking at the growing conditions of hemp to be able to help farmers grow hemp suitable for use elsewhere.
- Market: We are looking at the physical and chemical properties of biofibres to determine which are best suited for different applications.
- Society: We are looking at how existing products are designed and how those can be adapted to use the biofibres material instead of a non-renewable material.

We also serve: We are seeking at how products are manufactured and how those processes can be adapted for the biofibres-based products.

The北部in Industrial: We are looking at the entire materials industry to restructure the use of biofibres and green technologies to new and existing markets.

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<table>
<thead>
<tr>
<th>OEM</th>
<th>Equipment</th>
<th>Type of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent Technologies</td>
<td>SuperNova A (Cu) X-Ray Diffractometer System</td>
<td>Ultrastructural Analysis</td>
</tr>
<tr>
<td>Agilent Technologies</td>
<td>Cary 670 FTIR Spectrometer (with Focal Plane Array)</td>
<td>Localized and Bulk Spectral Analysis</td>
</tr>
<tr>
<td>Carl Zeiss</td>
<td>LSM 710 Confocal Laser Scanning Microscopy System</td>
<td>Imaging/Microstructural Analysis - Optical Sectioning &amp; 3D Reconstructions</td>
</tr>
<tr>
<td>Carl Zeiss</td>
<td>Axio Zoom V16 Macrooscope</td>
<td>Imaging/Microstructural Analysis - High Resolution at Low Magnification</td>
</tr>
<tr>
<td>Carl Zeiss</td>
<td>EVO 10 LS Environmental Scanning Electron Microscope (SEM) with Automated Large Area Scanning (ATLAS)</td>
<td>Imaging/Microstructural Analysis - 3nm Resolution with Controlled (static/dynamic) Humidity</td>
</tr>
<tr>
<td>Quantachrome</td>
<td>ULTRAPYC 1200e Automatic Gas Pycnometer</td>
<td>Density Analysis</td>
</tr>
<tr>
<td>Quantachrome</td>
<td>Sieving Riffler</td>
<td>Powder Sampling</td>
</tr>
<tr>
<td>Surface Measurement Systems (SMS)</td>
<td>Inverse Gas Chromotography (IGC) Surface Energy Analyzer (SEA)</td>
<td>Surface Energy Analysis; Adsorption</td>
</tr>
<tr>
<td>Surface Measurement Systems (SMS)</td>
<td>Dynamic Vapor Sorption (DVS) Advantage</td>
<td>Moisture Sorption Analysis</td>
</tr>
<tr>
<td>Dia-Stro</td>
<td>LEX810 Manual System &amp; PU1100 Pneumatic Unit; FDAS770 Fibre Dimensional System; ALS1500 Single Axis Sample Loading System</td>
<td>Automated Fibre Mechanical Property and Dimensional Analysis</td>
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<tr>
<td>Kruss</td>
<td>Tensimeter</td>
<td>Wettability, Contact Angle, Surface Energy Analysis</td>
</tr>
<tr>
<td>Leica</td>
<td>EM TIC3X Ion Beam Mill</td>
<td>Sample/Specimen Prep</td>
</tr>
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<td>Leica</td>
<td>Ultramicrotome</td>
<td>Sample/Specimen Prep</td>
</tr>
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<td>Leica</td>
<td>EM TXP Target Surfacing System</td>
<td>Sample/Specimen Prep</td>
</tr>
<tr>
<td>CZ Tech</td>
<td>Roller Crusher, Finisher, &amp; Shakers</td>
<td>Fibre Decortication</td>
</tr>
</tbody>
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WESTWARD BIOCOMPOSITES PROJECT

• 27 COMPONENT METALLIC TUB
• 2 COMPONENT SYNTHETIC COMPOSITES TUB
• HYBRID TUB
• BIOCOMPOSITES TUB WITH OPTIMISED FIBRE/RESIN CONTENT
WESTWARD MARKET SHARE

- Westward: 87%
- Ford: 7%
- Cushman: 2%
- Segway: 1%
- Other: 3%
WESTWARD BENEFITS

• 36% REDUCTION IN PRODUCTION COSTS

• THE CURRENT MARKET FOR WWI IS APPROXIMATELY 250-300 UNITS P.A.

• BASED ON IMPLEMENTING THE RENEWABLE TUB, WWI PROJECTS A CONSERVATIVE MARKET GROWTH AMONG THE EXISTING CLIENTELE TO REACH 400 UNITS P.A.
  • EACH BIOCOMPOSITE TUB REQUIRES 8.5KG OF FIBRE AND 19.8KG OF RESIN (BIOPLASTIC). THEREFORE, THE CURRENT NEED FOR WWI IS 3,400KG OF FIBRE AND 7,920KG OF RESIN. WWI ESTIMATES THE RENEWABLE TUB WILL INCREASE MARKETS, MARKET SIZE, AND MARKET PENETRATION TO POTENTIALLY TRIPLE THEIR ANNUAL SALES WITHIN FIVE YEARS
• Natural fibre composites market is expected to grow at a compound annual growth rate (CAGR) of 11.2% during 2014-2019.

• Major driver of this growth is the projected increased penetration of natural fibre composites materials in the automotive industry, which accounts for 31% of fibre reinforced composites usage globally, just to take advantage of their lightweight, recyclability and sound insulation advantages.

• In Europe alone, 97,650 tonnes of bio-composites reinforced by natural fibres are being used in the automotive industry. By 2020 this quantity could be more than doubled

• This amount of natural fibre will require over 100,000 tonnes of biopolymer in order to produce renewable biocomposite material.

• Biomaterial polymers market is expected to reach $88.4 billion by 2017 from $44.0 billion in 2012, growing at a CAGR of 15%. (Lucintel)