

Biomaterials Workshop (Bryce Heard)

Workshop Session (3.30pm – 4.30pm)

Number of attendees: 20

Presentation Session

Please note, a PowerPoint Presentation was also used.

Bryce Heard

“Drivers of Change” slide.

- Oil industry make thousands of products from oil (crude product) eg, carpet, fabrics, contact lenses, building materials.
- If it can be made from oil, it should be able to be made from wood.

“The Opportunity” slide

- Alternative solutions figures from North America.
- Figures from Europe are disparate, but industry will grow faster than North America. North America still clinging to oil.

“BEAB Actions” slide

- Innovative Materials Centre in Rotorua (possibility).
- Commercially focussed centre.
- Similar to dairy industry model at Waikato University.
- MRI fund of \$2M – need to find matching funding from industry.

Russell Burton

- Oil is pervasive. It took over as a key product in many applications (eg, nylon, rayon etc).
- Natural fibres such as cotton are starting to make a comeback.
- Biomaterials Strategy:
 - Forestry smarter.
 - Developing tangible examples of the future.
 - Develop relationships between science, research and development and industry.
 - Tenon is a good example.
- Forests – landscape rehabilitation, lifestyle (mountain biking), Maori values plus others.
- Wood – not just logs. Fibre resources into bio facilities:
 - Harakeke, logs, bark:
 - Lumber, cellulose, proteins, natural resins, energy.
- Biomaterials markets.
- Not inventing anything new but can be a world leader (such as in forestry in the 1970's and in dairying).
- Product examples shown:
 - North American products – combining petrochemical products (recycled plastics) with wood. Wood becomes a cheap filler.
 - Producers have incentives to take recycled plastics – virgin plastics are cheaper than recycled.
 - New Zealand – “let's mould things not cut”.
 - Use of natural resins.
 - Pots – examples of mouldability.
 - Sisal (imported fibre product) – main product used for dartboards.
 - Harakeke fibres have fantastic properties.

- Harekeke fibre coated in resin.
 - Potato Pak products – disposable plates.
- Key message – “forests are our oil wells”.
- Whole product use – timber, bark, fibres, pulp and paper waste products.

Group Discussion Session

Please note, two groups were formed. The following are notes from Group 1.

- Is the product as good?
- Should sources of raw materials be considered?

Where should be focus first to start commercialising biomaterial products?

- Facilitate the people with the ideas. Contract laboratory.
- Ideas first. These generate the products.
- Scion will provide product opportunities.
- Cell of people required to bring products first.
- Second larger (or same) cell to provide the innovation.
- Create product – then application. What applications can you generate from these products?
- Expose the technology to the innovation of other people.
- Open the realm of possibility.
- Big player to develop Scion product further?
- If you have good resource of skill sets and innovation you can find the big player if / when needed.
- Need right environment to encourage entrepreneurialism.
 - Don't have all these pathways yet.
 - Base of sustainable funding needed.
- Very few people have done the figures.
 - Costs.
 - Replace oil based materials with biomaterials.
 - Need to be \$ for \$.
- Only if you are talking about straight product replacement. Innovation is different.
- Scion = raw material; Entrepreneurs = product.

What barriers do you see to making this happen?

1. Resource of talent. Who do we need to bring in? Apply lateral thinking to the base product / raw material.
 2. Contract laboratory or laboratory that is available. Give people two months. Opportunity to play in laboratory to see what they can come up with.
 3. Confidence – part of business incubator.
- Oil companies – have resources and are running out of natural products.
 - Who has a vested interest in making sure this works? Oil companies are likely to come in.
 - Are the products as good as oil-based products?
 - Are they affordable?
 - Narrowing gap between costs of oil and wood.
 - Need to have the right mix of people – then capital, confidence and technology will not be barriers.

How do we deal with the barriers?

- Scion – has the technology. Needs to be converted into products.
- Need resource to bring people in.
 - Entrepreneurial resource.
 - Starting point.
 - Waiariki classes – students work with technology and develop products. Awareness of technology.
- Compliance needs to be easy – support for people and businesses to come in to do business.
- How widely known are the products?
- Need for communication – website? Protection of property (to prevent oil companies stealing ideas).
- Communication not really the role of Scion.
- Field of support and resource. Given opportunity to develop and test products.
- Matching technology with innovation – building a bridge.

Group Discussion Report Back Session

Group 1.

- Both products and players important.
- Match up research and development with innovation.
- How do you expose these products to the wider market?
 - Small network of people (permanent), larger network as required. Cell of entrepreneurs.
 - Website – intellectually protected.
- If the idea is good enough (first challenge), the capital will be there.
- No barriers if structure in place – if the idea is good enough...

Group 2.

- Bounce off what we have now.
- Utilisation of waste streams.
- Technological solution – easy part.
- Market is killer.
- Why Rotorua?
- All about partnering.
- Rotorua as the nucleus – demonstration plant.
- Building key relationships with stakeholders (especially Maori) – key values. Not just about cost.
- Long-term Rotorua base for industry – what would that look like?
- Yes there is an opportunity – where do you start? Need partners.