

<p><b>Company Name and Contact Details:</b></p>	
<p>Scion  Michael Jack, Theme Leader  michael.jack@scionresearch.com  (07) 343 5899, <a href="http://www.scionresearch.com">www.scionresearch.com</a></p>	<p><b>Core Skill(s):</b></p>
<p>Crown-owned research institute Scion has a long history in renewable energy research and development activities dating back to the 'Wood-to-Ethanol Programme', which was commissioned by the Liquid Fuels Trust Board in the 1970's.</p> <p>Scion is currently undertaking a range of bioenergy and biorefinery research and development activities across the whole production chain, from resource establishment through to product development.</p> <p>Scion was the lead organisation in the 'Bioenergy Options for New Zealand' study, which assessed New Zealand's bioenergy potential and developed a strategy for the future. Scion has research programs focused on multi-use forests, which can produce a range of products including feedstocks for energy and biofuels, pulp and paper, and new chemical platforms. Scion is also investigating the application of biotechnologies to alter the growth rate and chemical properties of trees so they are more suitable for as a biomass feedstock.</p> <p>Scion has developed a Geographic Information Systems (GIS) model for biomass recovery that calculates feedstock supply costs and delivery costs of the biomass to an energy plant. This model has been used to assess the economic feasibility of a biofuel plant in the Central North Island and can be used to optimise energy plant scale, siting, and long-term feedstock supply security. Other models are being developed to generate materials/energy balances and life cycle assessments across such operations and direct strategies for improved energy and carbon efficiencies in lignocellulosic-to-biofuels processes.</p> <p>A significant research programme at Scion at present is the 'New Zealand Lignocellulosic Biofuel Initiative', which is focused on developing a bioethanol pilot plant using New Zealand softwood feedstocks. This research programme is focused on the pre-treatment phase of the bioethanol conversion process, with the aim of making wood fibres more susceptible to enzymatic conversion and development of co-products. Scion has partnered with BP New Zealand and United States (US)-based bioethanol production company, Verenium Corporation on this programme. This project aims to reach pilot plant scale by 2012.</p> <p>The biorefinery concept is a central focus of Scion's research in this area. For example, Scion is involved in developing high-value products and chemical intermediates from lignin, which is a by-product of conversion processes from wood-to-liquids. These lignin-based products would be renewable replacements for current petroleum-based products, such as, resins, adhesives and plastics.</p> <p>Other current research includes the development of novel thermo-chemical processes to enhance energy generation from municipal wastes and woody biomass resources and technologies for water treatment and re-use within a biofuels or biorefinery plant.</p>	<ul style="list-style-type: none"> <li>• Understanding New Zealand's (NZ) current and potential woody biomass resources</li> <li>• Biological and thermal biomass conversion technologies</li> <li>• Energy modeling and life cycle assessment</li> <li>• Plant and industrial biotechnology</li> <li>• Biomaterials development</li> <li>• Water and waste management technologies</li> </ul>
	<p><b>Biofuel Focus:</b></p> <ul style="list-style-type: none"> <li>• Second generation feedstocks (woody biomass)</li> <li>• Economic and engineering models for biofuel production chains</li> <li>• Bioethanol and next generation fuels – biological and thermal conversion</li> <li>• Co-products from lignin</li> <li>• Water recycling processes</li> </ul>
	<p><b>Core Product/Activity:</b></p> <ul style="list-style-type: none"> <li>• Research and Development</li> </ul>
	<p><b>Key Project Activities:</b></p> <ul style="list-style-type: none"> <li>• Lignocellulosic Bioethanol Initiative</li> <li>• Bioenergy Options for NZ</li> <li>• Biorefineries</li> <li>• Waterproofing Biorefineries</li> <li>• Future Forest Systems</li> </ul>
	<p><b>Leading Edge:</b></p> <p>Scion's key advantage is the ability to carry out research and development across the entire biofuel value chain including:</p> <ul style="list-style-type: none"> <li>• Woody biomass resource development and logistics</li> <li>• Pretreatment and conversion technologies for biofuels and co-products</li> <li>• Assessment and mitigation technologies for improved environmental footprints of biofuels operations</li> </ul>
	<p><b>Investment Base:</b></p> <ul style="list-style-type: none"> <li>• NZ government and industry investors</li> <li>• US industry investors</li> <li>• European government investors</li> </ul>
	<p><b>Employees:</b></p> <ul style="list-style-type: none"> <li>• 320</li> </ul>
	<p><b>Production Capacity:</b></p> <p>The Lignocellulosic Bioethanol Initiative is aiming to realise a 90 ML/year commercial plant in the Central North Island.</p>