


<p><b>Company Name and Contact Details:</b></p>	 <p>UC UNIVERSITY OF CANTERBURY <i>Te Whare Wānanga o Waitaha</i> CHRISTCHURCH NEW ZEALAND</p>
<p>University of Canterbury Professor and Director - Shusheng Pang www.canterbury.ac.nz shusheng.pang@canterbury.ac.nz (03) 3642538</p>	
<p>The Bioenergy Research Group in Department of Chemical and Process Engineering (CAPE), University of Canterbury, has been undertaking research on biomass energy and bioliquid fuel over the last two decades. The research interests include combustion and gasification for thermal energy and electricity, fermentation for ethanol and methanol, and Fischer-Tropsch synthesis of syngas for biodiesel. Studies have mainly been focused on technology development and improvements, involving fundamental and experimental studies on the conversion processes. Various laboratory and pilot facilities have been constructed and tested. Teaching courses and research projects have been offered to both undergraduate and postgraduate students.</p>	<p><b>Core Skill(s):</b></p> <ul style="list-style-type: none"> <li>Advanced biomass gasification, pyrolysis and Fischer-Tropsch synthesis of liquid fuel.</li> <li>Fundamental research and process simulation.</li> <li>Process optimization and design.</li> <li>Feasibility studies.</li> </ul>
<p>Since 2004, Professor Pang and his research team have focussed on development of thermo-chemical technologies to convert biomass (wood residues, agricultural residues and biosolid wastes in NZ) to hydrogen-rich syngas for combined heat and power (CHP) which can be integrated to NZ wood processing plants.</p>	<p><b>Biofuel Focus:</b></p> <ul style="list-style-type: none"> <li>2<sup>nd</sup> generation focus.</li> <li>Biodiesel.</li> </ul>
<p>Currently, Professor Pang is leading a new research programme to convert the above biomass resources to syngas and liquid fuel aimed at increasing efficiency and reducing costs. The technologies include an advanced gasification process developed by the same research team to produce syngas followed by gas cleaning and FT synthesis to biodiesel. The programme also investigates co-gasification of biomass with coal and gasification of energy-densified biomass slurry through pyrolysis processing. New biomass resources from both forestry and agriculture is also explored. Feasibility studies are also performed.</p>	<p><b>Core Product/Activity:</b></p> <ul style="list-style-type: none"> <li>Education and research.</li> </ul>
<p>All of these technologies which are being developed for NZ resources are at the international leading edge. The ultimate objective of the programme is to increase transport biofuel supply using NZ renewable energy resources with benefit of zero net carbon emission over the whole tree-waste-biofuel chain.</p>	<p><b>Key Project Activities:</b></p> <ul style="list-style-type: none"> <li>Biomass gasification for clean, hydrogen-rich syngas using advanced steam gasification technology.</li> <li>Cold model of the advanced gasifier for fluidynamics studies.</li> <li>Pyrolysis reactor for biomass densification and liquid fuel.</li> <li>FT reactor for liquid fuel synthesis.</li> </ul>
<p>The above programmes are co-funded by NZ Foundation for Research, Science and Technology and industry. The research team consists of international collaborators, NZ research institutes and industry partners. The research team at the University of Canterbury consists of four academic staff, two research associates and six postgraduate students.</p>	<p><b>Leading Edge:</b></p> <p><i>A 100 kW advanced steam-blown biomass gasifier has been developed and constructed. Hydrogen-rich (40vol%) syngas is produced. Cold model of the above gasifier is built for fluidynamics studies.</i></p> <p><i>A Fischer-Tropsch reactor is available for liquid fuel synthesis. Pyrolysis reactor is available for biofuel production.</i></p>
	<p><b>Investment Base:</b></p>
	<p>New Zealand</p>
	<p><b>Employees:</b></p>
	<p>n/a</p>
	<p><b>Production Capacity</b></p>
	<p>n/a</p>