

Title:	Organic waste – A bioresource for production of novel cellulose nanocomposites
Abstract:	<p>The research project comprises of four major activities that will constitute two postgraduate research projects as follows:</p> <ol style="list-style-type: none"> 1. Identifying optimal fractionation and recovery processes from literature for isolation of cell wall components into the most economical product portfolio comprising of celluloses, hemicelluloses, lignin with pectin, organic acids and polyphenols as by-products and co-products from grain and sub-tropical fruit process wastes. 2. Experimental validation of the identified process route(s) by determining appropriate conditions for fractionation of the products and characterisation of the physical and functional properties of the fractions. 3. Based on documented methods, innovative methods for selective production of nanocellulosic materials will be developed from the cellulosic component of the waste. This will include use of a combination of physical, chemical and biological methods. 4. Technical evaluation of methods for functionalisation of nanocelluloses for the food packaging industry using hemicelluloses, lignin, organic acids, pectin and polyphenols as modifying agents.
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Partner institutions:	-
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Degree:	PhD
Funded by:	DST Waste Roadmap
Start date:	March 2016
End date:	March 2019
Feedstock:	Grain milling residues and mango wastes
Value chain products:	Hemicelluloses, lignin, organic acids, pectin and polyphenols
Geographic source of the feedstock:	National