

JOINT EVENT ON

# 5<sup>th</sup> International Conference on Bioplastics and 6<sup>th</sup> World Congress on Biopolymers

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### Resin based composites, the ultimate green material

The current world-wide focus on Climate Change has led to a re-evaluation of all aspects of manufacturing in order to reduce the level of carbon dioxide released in to the atmosphere. One approach has been to look to the natural world for the raw material supply on the basis that this is sustainable. This has led to an over simplification of the problem. We still need to minimize the consumption of energy and the inclusion of other non-sustainable sources of raw materials as well as minimizing waste production. As part of the Research Programme of the Centre for rapid and Sustainable Product Development we have initiated a major strand of work under the umbrella of “Adding value to Forest based Products”: The basic objective is to increase the economic value of forests to ensure their stability and to underpin biodiversity, both objectives are critical to the Paris Accord (United Nations Framework Convention on Climate Change dealing with greenhouse gases emissions mitigation, adaptation and finance). Historically, Portugal was the leading exporter in the world of Rosin, a material obtained from pine resin. The pine forests of Portugal are particularly suited to the production of rosin, but in recent years the forests have declined due to poor maintenance and cheap imports of rosin from other countries. Pine resin as tapped from trees contains a mixture of Rosin which itself is a mixture of chemical compounds, water and turpentine. The Rosin is extracted using a particularly eco-friendly process require no other input than the pine resin. The output streams are Rosin, Turpentine and clean water. In order to maintain the green credentials we are look to products which require no further processing of Rosin both to reduce waste and also minimize energy consumption. To date we have produced an eco-foam, composites and scaffolds for tissue engineering.



### Biography

Geoffrey Mitchell is passionate about direct digital manufacturing which enables products to be manufactured directly from a digital design without the need for specialist tooling or moulds and the development of novel materials to support the emerging technologies associated with DDM. He brings a wealth of experience working with polymer based materials both natural and synthetic. He is fascinated by the links between the scales of structures present in all materials and especially biopolymers. He is focused on using processing as a tool to control those scales of structure and hence define the final products of the material.

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