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Challenges with Biopolymers

There is a massive world-wide demand for sustainable materials, in particular, for those materials which exhibit biodegradability to avoid the current problems of plastics in the oceans. Before we can transform the materials supply chain it is helpful to reflect on the particular properties which have made polyolefin based polymers so successful. It is clear that just having a suitable material is not sufficient, we need the manufacturing processes which successfully produces objects and we need the appropriate designs for those materials. It is the case that the use of high performing polyolefins are essential for the continued safe supply of water and electrical power. However, we need to be more discriminating in our use of materials through appropriate design to deliver the needs for example in the field of packaging. This is an underdeveloped area of bioplastics. We review the short comings in this respect with regard to available bioplastics. We caution against seeing bioplastics as a straight swap with existing plastics. We propose that embracing the whole life cycle analysis approach to product design and material choice provides a sounder basis for future developments. It is timely that we embrace the concept of the circular economy whilst we deal with the plastics in the ocean disaster. We illustrate this approach by giving some examples from recent work at CRDSP is the field of bioplastics.

Biography

Professor Mitchell carried out his doctoral studies at the University of Cambridge and postdoctoral studies at Hokkiado University Japan, and the University of Cambridge. He is currently Vice-Director of the Centre for Rapid and Sustainable Product Development, Institute Polytechnic of Leiria, Marinha Grande, Portugal a centre of excellence in the field of additive manufacturing, tissue engineering and regenerative medicine. He is also Emeritus Professor at the University of Reading UK. He has published over 300 papers in international journals and 6 books. He is an editorial board member of several international journals.

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