

Recycling processes for multilayer packaging materials based on selective enzymatic depolymerisation

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Multilayer plastics consisting of more than one type of polymer are widely applied as e.g. food packaging. Use of multilayer plastics is advantageous due to their good barrier properties or to enable efficient sealing of the packaging. However, multilayer plastics provide a major challenge from the recycling perspective, as it is extremely difficult to separate the various layers of the material to obtain pure polymer streams that can be recycled by conventional mechanical recycling. Therefore, multilayer packaging is currently essentially non-recyclable. In the BBI-JU-financed ENZYCLE project, we aim to enable recycling of multilayer packaging by harnessing the ability of enzymes to selectively depolymerise a single polymer present in a multilayer material. In particular, we are targeting multilayer packaging composed of a PET and a polyolefin layer. The PET layer is enzymatically depolymerised to yield products that can be applied in the production of new plastics. Meanwhile, a residual polyolefin layer is obtained, which may be recycled using conventional recycling technologies. This talk will discuss the latest status of these developments.