

Interface Polymers – transforming polymers and revolutionising recycling

Polyolefins such as polyethylene and polypropylene pervade all aspects of modern life, but they have low affinity for paints, adhesives and coatings, while polyolefin composites have an inability to successfully blend in components such as fibres and particulate fillers. Due to this lack of compatibility, plastic waste comprising polyolefins mixed with other plastics has severely compromised mechanical properties so that the majority of mixed plastic waste is being incinerated or dumped instead of being reused.

Interface Polymers has developed additive technology which can improve the cost and performance characteristics of polyolefins, and also create a new type of recyclable polymer packaging.



Technology overview

Interface Polymers' Polarfin® copolymer additive technology modifies the surface properties of the most commonly used plastics enabling adhesion between otherwise incompatible materials. The invention enables product innovation opportunities such as novel plastic alloys and composites, with tailored physical properties and cost/performance improvements in existing applications. Most recently, their new Polarfin-Blue polymer alloys will make it possible to manufacture new mixed plastic products which can be recycled multiple times by existing separation processes.



The Company

Interface Polymers was established in 2016 by researchers from the University of Warwick Department of Chemistry. The founders, Dr Chris Kay and Professor Peter Scott, also took part in Innovate UK's ICURe¹ programme, which supports university researchers to validate their ideas in the marketplace. Meetings with over 100 industry experts and potential end users established numerous applications in packaging, construction and automotive sectors. As a commodity industry, there is continued pressure on polyolefin producers to maintain costs while improving material performance, and they identified an addressable market of 222 kilotonnes of Polarfins® in these sectors.

Next Steps

In 2019, Interface Polymers was awarded the InnovateUK 'Plastics Innovation: towards zero waste' research grant to reduce mixed plastic waste by recycling multi-layer flexible plastic packaging back into high value uses. Using this funding, Interface Polymers will develop commercially viable, sustainable solutions to this costly and environmentally unacceptable flexible plastic packaging waste problem. The R & D project team will be using Interface Polymers' patented Polarfin chemistry to create new Polarfin-Blue additive materials which will enable compatibility between thermoplastics used in multi-layer packaging to develop new commercial grade Polarfin-Blue compatibilized polymer alloys which will not require a costly, complex, recycling infrastructure to separate multi-layered films, thus providing a viable recycling solution.

FUNDING TO DATE

2016 – ICURe funding - £35k
 2016 – InnovateUK grant - £500k
 2017 – 24Haymarket investment - £2m
 2019 – InnovateUK grant - £638k

Patents: patent applied for

¹ ICURe - Innovation-to-Commercialisation of University Research