ISOPREP

Full Title: Ionic Solvent-based Recycling of Polypropylene Products

Aim:

This project addresses the call topic CE-SPIRE - 10-2018: Efficient recycling processes for plastics containing materials.

CE-SPIRE-10-2018

A method (ISOPREP) is proposed for recycling polypropylene (PP) products into virgin quality PP and hence reusable for the production of the highest grade PP products. The method exploits a novel ionic polymer solvent designed for highly tuned solubility of PP, patented within the partnership, with the key advantages/innovations:
(1) A performance identical to PP resin freshly manufactured from fossil sources
(2) Cost effective compared with producing PP from fossil sources
(3) Reduces the reliance of PP production on fossil resources
(4) Achieves a step reduction on life cycle emissions and energy compared with the use of fossil resources
(5) Is entirely closed loop with negligible loss of solvent per cycle and hence negligible emissions thus non-polluting
(6) The solvent is non-toxic and non-flammable in the process temperature range
(6) Removes dyes, colours and impurities
(7) Prevents sending end of life PP products to landfill and avoids them polluting both land and sea

Concept:
PP is used in a huge variety of products such as automobile interiors, consumer goods packaging, electronics, construction materials, carpets and other home furnishings. The global PP market, accessible by the ISOPREP system, was estimated at €65bn per annum in 2017, totaling approximately 23% of the entire plastics market.

Given the typically short life of PP products, only 1% of which are recycled, there is a great need to implement innovative and disruptive technologies to mediate this trend. Although applicable to a wide range of products, the concept will be developed and demonstrated at pilot plant stage for recycling polypropylene carpet at TRL7, based on prior and patented knowledge within the partnership at TRL5.

Start date:
01/10/2018

End date:
30/09/2021