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## UK project develops new biodegradable plastic film

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By David Eldridge

The DIBOP project has developed a biodegradable plasticizer for PLA

24 November 2006 – A project, part-funded by the UK government, has developed a biodegradable plasticizer to enable PLA to be used in film and other flexible packaging.

The DIBOP (Development of Inherently Biodegradable Packaging Materials) project at Aston University has built on a previous collaboration with speciality chemical manufacturer Robinsons Brothers and also involves bag and film supplier Europackaging, technology company ThermoPrism, and medical giant GSK.

The DIBOP project, which has support from the government's Sustainable Technologies Initiative, has modified the flexibility of normally rigid PLA so that the amount it can be stretched before it snaps has been increased from 5% to 320%.

The modifier is based on a block co-polymer formed between PLA and polyethylene glycol (PEG). The modified PLA disappeared in a composter within 20-25 days.

Dr Allan Amass of Aston University said: "The important thing about these plasticizers is that they should be biodegradable because they may account for between 10-20% of the additives in the product. We have also made significant progress in terms of the nature of the catalyst systems needed to blend them with the product and how we can control the molecular structure of these additives."

The project developed a non-toxic replacement for the tin-based catalyst used in the synthesis of the PLA-PEG block co-polymer. The new potassium-based catalyst achieves efficient synthesis of the co-polymer while being safe for food industry packaging applications, said the research group.

After laboratory trials in the DIBOP project, a full scale system for producing plastic bags was built and the additives were produced on a commercial scale.

The group said: "With further research the new packaging products could be in the shops within four to five years. There could also be significant biomedical applications in the development of new drug delivery systems."

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