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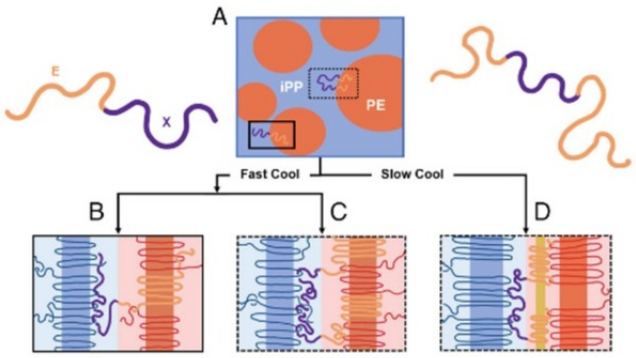
# Bioderived polymers from dienes for compatibilization and recycling of polyethylene and polypropylene mixed waste

**Bioderived block copolymers used for the recycling of polyethylene (PE) and polypropylene (PP) mixed waste.**




**Technology ID**
2024-028

**Category**
All Technologies
Engineering & Physical Sciences/Chemicals
Engineering & Physical Sciences/Materials
Engineering & Physical Sciences/Sustainable Technology

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**IP Status:** Provisional Patent Application Filed

## Applications

- Recycling PE and PP
- Circular plastics economy

## Technology Overview

Polyethylene (PE) and polypropylene (PP) constitute almost 70% of the global plastics market. They offer many benefits in consumer products, and contribute to a rapidly growing reservoir of plastic waste, which are deposited in landfills and the environment. Researchers at the University of Minnesota have developed a bioderived block copolymer that can be synthesized with known commercial processes and used for the compatibilization of commercial PE and PP mixed plastic waste to yield tough blends with mechanical properties similar to those of the pure components.

## Phase of Development

**TRL: 3-4**
Small plastic films have been produced from mixed recycled plastic

### Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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### Researchers

- **Frank Bates, ScD** Professor, Department of Chemical Engineering and Materials Science
- **Christopher Ellison, PhD** Professor, Chemical Engineering and Materials Science

### References


1. Liyang Shen, Gabriela Diaz Gorbea, Evan Danielson, Shuquan Cui, Christopher J. Ellison, and Frank S. Bates(August 2023) , https://www.pnas.org/doi/abs/10.1073/pnas.2301352120, https://www.pnas.org/, 120