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New Methods for Introducing Dynamic Crosslinks into Polymers

Tech ID: 33779 / UC Case 2024-990-0

BRIEF DESCRIPTION

This technology capitalizes on azide-masked nitrene crosslinking chemistry to introduce a scalable and efficient method for the compatibilization and recycling of mixed plastics.

FULL DESCRIPTION

Researchers at UC Irvine have developed a dynamic crosslinker for the compatibilization and recycling of mixed polymer blends that are plagued by their inherent incompatibility. This bifunctional crosslinker is fabricated with aromatic sulfonyl azides that exhibit high thermal stability yet high reactivity across diverse plastics once activated. Unlike conventional compatibilization methods, this technology promises versatile applications across various plastic waste and improved mechanical properties of recycled plastics.

SUGGESTED USES

- » Recycling facilities specializing in mixed plastic waste.
- » Manufacturers of plastic products seeking sustainable materials.
- » Industries focused on circular economy solutions for plastics.
- » Research and development in advanced recycling technologies.

ADVANTAGES

- » Enhances mechanical performance and phase morphology of recycled plastics.
- » Facilitates the recycling of mixed plastic waste, supporting closed-loop recycling efforts.
- » High thermal stability suitable for processing at temperatures required by most plastics.

PATENT STATUS

Patent Pending

RELATED MATERIALS

- » Castro, J., Westworth, X., Shrestha, R., Yokoyama, K., & Guan, Z. (2024). Efficient and Robust Dynamic Crosslinking for Compatibilizing Immiscible Mixed Plastics through In Situ Generated Singlet Nitrenes. *Advanced Materials*, 36(32).

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OTHER INFORMATION

CATEGORIZED AS

- » **Materials & Chemicals**
- » Chemicals
- » Polymers

RELATED CASES

2024-990-0

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