

## Isosorbide-based Polymers

Renewable chemical feedstocks are becoming increasingly cost competitive with petroleum based analogs as a result of advances in synthetic methods and production processes. Sugar (glucose) derivatives such as isosorbide have been used as building blocks in biobased polymers because of their rigid structure and functionality.

### Description of the Invention

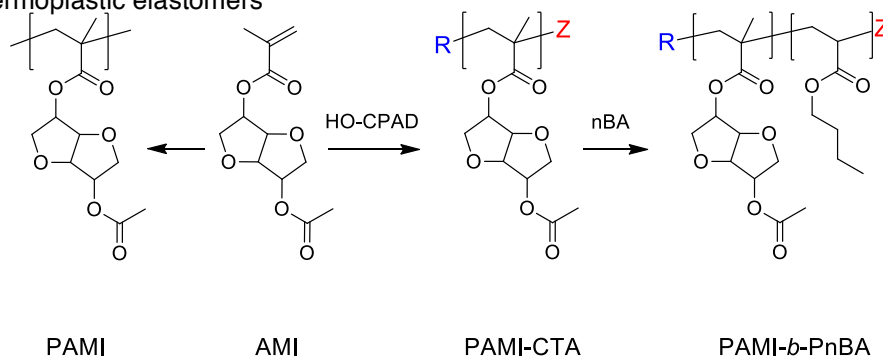
Researchers at the University of Minnesota have synthesized a new isosorbide derivative, which can be polymerized and incorporated into block polymers. The new monomer, AMI (acetylated methacrylic isosorbide), can be efficiently synthesized in two steps from commercially available starting materials. It can be polymerized using a variety of methods including traditional free radical and Reversible Addition-Fragmentation chain Transfer (RAFT) polymerizations. The resulting polymers are isosorbide-based polymethacrylates. Additional research focusing on thermoplastic elastomer applications is on-going.

### Features and Benefits

- Simple synthesis
- Controlled polymerizations
- Isosorbide based block polymers
- High glass transition temperature ( $T_g \approx 130$  °C)
- Good thermal stability ( $T_d = 251$  °C)

### Potential Applications

- Biobased polymer
- Methacrylate replacement
- Adhesives
- Coatings
- Thermoplastic elastomers



### Technology Status

Proof of concept. Polymers synthesized and characterized.

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### IP Status

Patent Pending

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### Case Reference

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