



Environmentally Friendly Thermoset from Sugar (20140072, Dr. Marc Hillmyer)

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Renewable and Degradable Dimethacrylate

A process has been developed for synthesizing two new dimethacrylate monomers from glucose and mannose. The materials produced by the sugar-derived dilactones undergo degradation in basic conditions while remaining stable in neutral and acidic environments. The dimethacrylates are derived from sugars, making them renewable and comparable to petroleum-based sources. The monomers reported are sugar-derived dimethacrylates, and provide a pathway to create sustainable materials for use in coatings, thermosets, adhesives and particle-based drug delivery.

Demand for Environmentally Friendly Dimethacrylate

Dimethacrylates are commonly derived from petroleum and only degrade in highly acidic conditions. Production of materials from renewable sources and with easy degradability are needed for use in many industries.

BENEFITS AND FEATURES OF THERMOSETS FROM SUGARS:

- Sugar derived, making it an environmentally friendly and renewable option
- Easily degraded in basic conditions
- First advancement for the creation of dimethacrylate molecules using this pathway

Phase of Development Proof of Concept

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