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

**IP Status:** Issued US Patent; **Application #:** 14/554,823

**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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