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Bio-Based Polysulfones for a Renewable and Safer Alternative to Bisphenol A (BPA)

Background

Bisphenol A (BPA)-based polysulfones are widely used for many commercial applications but has been reported as a human endocrine disruptor. Because BPA is produced from petroleum feedstocks, its use also presents environmental sustainability concerns. A renewable, safer alternative to BPA-based polysulfones is therefore necessary, particularly for healthcare, food contact, and biomedical applications.

Invention Description

Researchers at Arizona State University and the University of Delaware have synthesized, for the first reported time, BGF-polysulfone polymer from bisguaiacol F (BGF) and 4,4'-difluorodiphenyl sulfone (DFDP). The thermomechanical properties of the BGF-based polysulfones were found to be comparable to those of commercially available BPA-based polysulfones. These polymers are well suited for high-temperature, harsh-solvent, environmental, and space applications. Several other bisguaiacol-based polysulfones could potentially be produced in a similar fashion, such as bisguaiacol M, bisguaiacol S, bisguaiacol P, and bisguaiacol A derived from substituted methoxyphenols.

Potential Applications

- Water treatment membranes
- Biomedical devices
- Household products
- Printed circuit boards
- Food packaging
- Fuel cell membranes
- Automation components

Benefits and Advantages

- Features thermomechanical properties comparable to those of BPA
- Renewable
- Safer than BPA for human health

[Research Homepage of Professor Matthew D. Green](#)