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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](#)