## Synthesis of Bisphenols Containing Pendant Furyl Group Based on Chemicals Derived from Lignocellulose and Their Utilization for Preparation of Clickable Poly(Arylene Ether Sulfone)s

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**Abstract :** Lignocellulose-derived chemicals such as furfural, furandicarboxylic acid, syringol, guaiacol, etc are highly attractive as sustainable alternatives to petrochemicals for the synthesis of monomers and polymers. We wish to report herein the facile synthesis of fully bio-based bisphenols containing pendant furyl group by base-catalyzed condensation of furfural with guaiacol. Bisphenols possessing pendant furyl group represent valuable monomers for the synthesis of a range of polymers which include epoxy resins, polyesters, polycarbonates, poly(aryl ether)s, etc. Several new homo/co-poly(arylene ether sulfone)s have been prepared by the reaction of 4,4(-fluorodiphenyl sulfone (FDS) with 4,4'-(furan-2-ylmethylene)bis(2-methoxyphenol) (BPF) and 4,4(-isopropylidenediphenol (BPA) using different molar ratios of bisphenols. Poly(arylene ether sulfone)s showed inherent viscosities in the range 0.92-1.47 dLg-1 and number average molecular weights (Mn), obtained from gel permeation chromatography (GPC), were in the range 91,300 – 1,31,000. Poly(arylene ether sulfone)s could be cast into tough, transparent and flexible films from chloroform solutions. X-Ray diffraction studies indicated amorphous nature of poly(arylene ether sulfone)s. Poly(arylene ether sulfone)s provide reactive sites for chemical modifications and cross-linking via Diels-Alder reaction with maleimides and bismaleimides, respectively.

Keywords : bio-based, bisphenols, Diels-Alder reaction, poly(arylene ether sulfone)s

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