Abstract

The synthesis of fully soluble branched poly(arylene ether)s via an oligomeric A2 + B3 system, in which the A2 oligomers are generated in situ, is presented. This approach takes advantage of the significantly higher reactivity toward nucleophilic aromatic substitution reactions, NAS, of B2, 4-Fluorophenyl sulfone, relative to B3, tris(4-Fluorophenyl) phosphine oxide. The A2 oligomers were synthesized by reaction of Bisphenol-A and B2, in the presence of the B3 unit, at temperatures between 100 and 160 °C, followed by an increase in the reaction temperature to 180 °C at which point the branching unit was incorporated. The presence of branching was confirmed via 31P NMR spectroscopy and the thermal properties of the polymers were evaluated utilizing TGA and DSC analyses.