Abstract

A series of poly(aryl ether sulfone)s with varying percentages of ammonium groups, located on truly pendent positions, was prepared and characterized. The initial polymers were prepared by nucleophilic aromatic substitution (NAS) polycondensation reactions of varying ratios of 3,5-difluoro-4’-methylidiphenylsulfone and 4,4’-difluorodiphenylsulfone, with bisphenol-A as the nucleophilic reaction partner. The tolyl groups in the resulting polymers were subjected to radical bromination with N-bromosuccinimide, followed by amination with three different amines: trimethylamine, dimethylhexadecylamine, and N-methylimidazole. The polymers were characterized by $^1$H and $^{13}$C NMR spectroscopy, thermogravimetric analysis, and differential scanning calorimetry. With the exception of the 100% functionalized polymers, tough films were observed after casting from solutions in dimethylformamide. The films were evaluated for potential use as alkaline exchange membranes (AEM) by determining their water uptake and ion exchange capacity values.