Abstract

The di-iodinated derivative of 3,5-difluorotriphenyl phosphine oxide, 3,5-DiFTPO-I₂, was synthesized for the modification of poly(arylene ether phosphine oxide)s, PAEPOs. The di-iodinated monomer was polymerized to afford the di-iodinated polymer, a pre-cursor for tailoring solubility and the thermal properties of the PAEPO derivatives via functionalization. The di-iodinated polymer was post-functionalized via the Suzuki Miyaura cross coupling reaction with a variety of boronic acids. The successful conversion of the iodo groups, along with the immense number of possible functional groups that can be introduced to the di-iodinated polymer makes PAEPO-derivative a highly useful thermoplastic with a wide range of potential uses.

The synthesis of 3,5-DiFTPO monomer derivatives was investigated for the use of synthesizing chiral compounds. The synthesis of these monomers (the mono-nitrated 3,5-DiFTPO, the nitrated-iodinated 3,5-DiFTPO monomer, the mono-iodinated 3,5-DiFTPO monomer, and the nitrated-brominated 3,5-DiFTPO monomer) proved successful, conceptually, and provides an avenue for the development of the desired chiral compounds.