

Abstract

Three new compounds of the aromatic-aliphatic Schiff base type have been prepared via a condensation of 4-ethynylbenzaldehyde with various configurational isomers of 1,2-diaminocyclohexane. The compounds contained two azomethine links and two identical ethynyl groups located at terminal benzene rings. By means of a condensation of 4-ethynylaniline with 5-ethynyl-1,3-benzenedicarbaldehyde an aromatic Schiff base has been prepared which contained two azomethine links interconnecting three benzene rings each of which being substituted with one ethynyl group. All the prepared compounds were used as the monomers of the coordination chain growth polymerization in which the ethynyl groups of the monomers were transformed while the azomethine groups remained preserved. The polymerizations provided polymer networks in which the polyacetylene main chains (formed via polymerization) were extensively interconnected with aromatic-aliphatic or aromatic segments containing azomethine groups. The quantitative conversion of ethynyl groups was achieved in the polymerizations of diethynylated monomers. The polymerization of a triethynylated monomer proceeded under the conversion of the ethynyl groups of the monomer up to 90 %. The triethynylated monomer provided networks with microporous texture manifested by a specific surface area up to 515 m²/g. The porosity of the networks prepared from diethynylated aromatic-aliphatic monomers was strongly reduced probably due to insufficient rigidity of the segments interconnecting polyacetylene chains of the networks.