

Abstract

A series of following Schiff base type monomers with two terminal ethynyl groups and one or two azomethine groups have been synthesized: *N*-(4-ethynylbenzylidene)(4-ethynylaniline), positional isomers of *N,N'*-(1,4-phenylene)bis(1-(ethynylphenyl)methanimine) and positional isomers of 1,1'-(1,4-phenylene)bis[*N*-ethynylphenyl)methanimine]. These monomers have been successfully polymerized in chain-growth mode with the use of [Rh(NBD)acac] as the coordination catalyst into densely cross-linked polyacetylene networks with micro/mesoporous texture and specific surface in hundreds of m²/g. The positive correlation between the conversion of ethynyl groups and specific surface area on one hand and the increase in reaction temperature and reaction time on the other side was proven. Varying the composition and architecture of polymerized monomers affected particularly the distribution of micropores and mesopores in the networks.

The postpolymerization modification of poly[*N*-(4-ethynylbenzylidene)(4-ethynylaniline)] network has been performed consisting in a partial releasing the links connecting the linear segments of the network. It was confirmed that despite this modification the network preserved the micro/mesoporous texture.