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The influence of cocatalysts on phenylacetylene oligo-and polymerization.

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Streszczenie

Titanium bisphenolate complexes [Ti(edbp)Cl_2] (**1**), [Ti_2(μ-OEt)$_2$(edbp)$_2$(OEt)$_2$] (**2**) and [Ti_2(μ-OMe)$_2$(edbp)$_2$(Me)$_2$] (**3**) (edbpH_2 = 2,2′-ethylidenebis(4,6-di-*tert*-butylphenol) combined with trialkyl aluminium AlR_3 (R = Me, Et, ^{i}Bu) activators induce phenylacetylene (PA) oligo- and/or polymerization. It was found that the catalytic activity and products formation depend strongly on the used cocatalyst. The **1**/$AlEt_3$ catalyst has the highest activity and selectivity (96% conversion; 98% *trans*-PPA). The PPA has low M_n values (2200) and PDI exceeding 1.04. Instead, **1**/Al^iBu_3 produces only cyclotrimers. Polymer formed by **2**/$AlEt_3$ possesses lower polydispersion index (PDI values 2.5) but high molecular weight (M_n ca. 13 × 10^3) and was the mixture of *cis* and *trans* stereoisomers of PPA. The compound **3** containing terminal methyl groups was unable to promote PA polymerization in absence of activators, only cyclotrimerization products (10% conversion) were formed.

Słowa kluczowe

Polymerization, Cyclotrimerization, Acetylenes, Titanium, Bisphenolate complexes

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