

Structure and catalytic activity of rhodium(I) carbene complexes in polymerization of phenylacetylene.

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Rh(I) carbene complexes of $[\text{RhX}(\text{bmim})(\eta^4\text{-1,5-cod})]$ type (bmim = 1-butyl-3-methyl imidazolium cation, $\text{X} = \text{Cl}$ **2**, Br **3**, I **4**), obtained in the reaction of $[\text{Rh}(\text{OMe})(\eta^4\text{-1,5-cod})]_2$ (**1**) with $[\text{bmim}]\text{X}$ ionic liquids, catalyzed polymerization of phenylacetylene (PA) to *cis*-polyphenylacetylene (PPA) in CH_2Cl_2 and in ionic liquids. The yield of PPA increased and molecular weight (M_w) decreased after addition of phosphorus ligands PPh_3 or P(OPh)_3 . Complex **4** reacted with P(OPh)_3 giving *cis*- $[\text{RhI}(\text{bmim})(\text{P(OPh)}_3)_2]$ (**5**) complex which catalyzed oligomerization but not polymerization of PA.

Słowa kluczowe

Rhodium complexes, N-heterocyclic carbene, Phenylacetylene polymerization, ionic liquids

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