Orthometallated palladium trimers in C–C coupling reactions.

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Streszczenie

A series of trimeric palladium complexes of the $[Pd_3(\mu\text{-}Cl)_4(P–C)_2]$ (P–C = orthometallated aryl phosphite) formula have been prepared and structurally characterized using ^{31}P NMR and ESI-MS methods. The structure of $[Pd_3(\mu_2\text{-}Cl)_4\{k^2\text{-}P,C–P(O–o\text{-}CH_3C_6H_3)(O–o\text{-}CH_3C_6H_4)_2\}_2]$, **1c**, was determined by X-ray diffraction. It is compared with the structure of the dimeric complex $[Pd_2(\mu\text{-}Cl)_2\{k^2\text{-}P,C–P(O–m\text{-}CH_3C_6H_3)(O–m\text{-}CH_3C_6H_4)_2\}_2]$, **3b**. The trimeric palladium complexes very efficiently catalyzed the Suzuki–Miyaura and Hiyama reactions in ethane-1,2-diol and the Sonogashira cross-coupling in ionic liquids. The mercury test confirmed the homogeneous pathway of the Suzuki–Miyaura reaction, although Pd(0) nanoparticles were observed by TEM in the post-reaction mixture.

Słowa kluczowe

palladium, palladacyclic, aryl phosphite, C-C coupling reactions, Ionic liquids, Pd(0) nanoparticles

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