Structure, dynamics and catalytic activity of palladium(II) complexes with imidazole ligands.

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Streszczenie

Several palladium complexes of the type $[Pd(im)_2Cl_2]$, $[Pd(im)_3Cl]Cl$, and $[Pd(im)_4]Cl_2$ (im = imidazole **1**, 1-methylimidazole **2**, 1,2-dimethylimidazole **3**, 1-butylimidazole **4**, **4a**, 1-phenylimidazole **6,** 1-phenylimidazoline **7**, and 1-methylimidazoline **8**) were prepared and structurally characterized. The square planar structure of two new complexes with the composition $[Pd(im)_4]Cl_2$ (**2b**, **4b**) was confirmed by X-ray analysis. In solution, exchange of imidazole ligands leading to heteroleptic products was evidenced by ESI-MS studies. Two bis-ligated complexes, bearing 1-methylimidazole (**2a**) and 1-propoxymethylimidazole (**5**) ligands, were obtained in the reaction of palladium with imidazoles formed by deprotection of one nitrogen atom in the respective imidazolium halides. Catalytic Suzuki–Miyaura reactions were carried out using the obtained palladium complexes in isopropanol–water solution. High yields of the cross-coupling products were obtained at 40 and 60 °C when 2-bromotoluene, 4-bromotoluene, and 4-bromoanizole were used as substrates.

Słowa kluczowe

palladium, imidazole, imidazoline, ESI-MS studies, Suzuki–Miyaura reaction

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