

Monomolecular, nanosized and heterogenized palladium catalysts for the Heck reaction.

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The review comprises discussion concerning transformations of soluble and insoluble palladium catalysts during the Heck reaction. Special attention is paid to two essential stages of the Heck reaction: reduction of Pd(II) in precursor to Pd(0) and oxidative addition of the main substrate, aryl halide, to Pd(0) in a form of monomolecular or nanosized Pd(0) colloid. It was shown that both, soluble and insoluble, palladium precursors form at the presence of the tetrabutyl ammonium salt soluble Pd(II) complexes of general formula $[\text{Bu}_4\text{N}]_2[\text{PdPh}_x\text{X}_{4-x}]$. Formation of these soluble complexes explains the change of Pd(0) nanoparticles size during the Heck reaction. Additionally the Heck reaction can proceed on the surface of Pd(0) nanoparticles (stabilized colloids).

Słowa kluczowe

Heck reaction, palladium, nanoparticles, Pd(0) colloid,
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