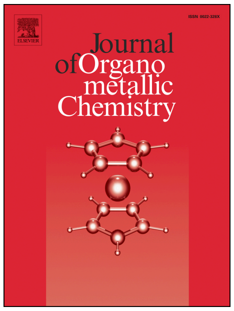

Successive alkylation of Pt^{II} by RI to form bis-organoplatinum(IV) derivatives as key steps for cross-electrophile coupling

Oleg V. Khazipov, Tatyana V. Krasnyakova, Denis V. Nikitenko, Marina A. Merzlikina, Ekaterina V. Khomutova, Serge A. Mitchenko

PII: S0022-328X(17)30674-5

DOI: 10.1016/j.jorganchem.2017.11.025

Reference: JOM 20190

To appear in: *Journal of Organometallic Chemistry*

Received Date: 30 October 2017

Revised Date: 26 November 2017

Accepted Date: 27 November 2017

Please cite this article as: O.V. Khazipov, T.V. Krasnyakova, D.V. Nikitenko, M.A. Merzlikina, E.V. Khomutova, S.A. Mitchenko, Successive alkylation of Pt^{II} by RI to form bis-organoplatinum(IV) derivatives as key steps for cross-electrophile coupling, *Journal of Organometallic Chemistry* (2017), doi: 10.1016/j.jorganchem.2017.11.025.

Successive alkylation of Pt^{II} by RI to form bis-organoplatinum(IV) derivatives as key steps for cross-electrophile coupling

Oleg V. Khazipov[a], Tatyana V. Krasnyakova[b,c], Denis V. Nikitenko[b], Marina A. Merzlikina[b], Ekaterina V. Khomutova[b], Serge A. Mitchenko[a,b,]*

[a] *Platov South-Russian State Polytechnic University (NPI), Prosveshcheniya 132, Novocherkassk, 346428 Russia*

[b] *L.M. Litvinenko Institute of Physical Organic and Coal Chemistry; 70 R. Luxemburg Str., Donetsk, 83114*

[c] *Taras Shevchenko Lugansk State University, 2 Oboronnaya Str., Lugansk, 91011*

ARTICLE INFO

Article history:

This paper is devoted to Professor Irina P. Beletskaya, whose brilliant researches in the field of C-C and C-Element coupling reactions and their elegant applying in organic synthesis have shaped to a large extent the current state of organometallic catalysis.

Keywords: Pt^{II} iodo complexes; iodoacetone; oxidative addition; solvent specificity; C-C coupling

---

ABSTRACT

A solvent-specific reduction of Pt^{IV} iodo complexes into Pt^{II} by iodide ions was found: in acetone, Pt^{IV} iodo complexes are almost quantitatively reduced into Pt^{II}, and iodine, which is formed upon the reduction, is bound in a poorly soluble polymeric complex with NaI and acetone.

The revealed solvent-specific reduction of Pt^{IV} into Pt^{II} was used for sequential alkylation of Pt^{II} iodo complexes with iodoacetone to form mono-, bis-, and tris-acetonyl Pt^{IV} derivatives and also with iodoacetic acid to give mono- and bis- carboxymethyl Pt^{IV} complexes. The reaction of iodoacetic acid is accompanied by its catalytic reduction into acetic acid.

The organic ligands in the formed organoplatinum compounds are mutually *cis*, which is essential for further accomplishment of C-C coupling reactions.

---

*Corresponding author. *E-mail address*: samit_RPt@mail.ru (S.A. Mitchenko)