Synthesis of a Benzothiazol-2-ylidene Complex of Tungsten(0) and Transfer of the Ylidene Ligand to Rhodium(I)

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2-Lithiobenzothiazole reacts with freshly generated [W(CO)5(THF)] to give the anionic ylidene complex (1). Treatment of 1 with allyl bromide yields complex [W(CO)5(1-allylbenzothiazolin-2-ylidene)] (2) while the reaction in wet CH2Cl2 leads to the formation of a mixture of 2 (major) and [W(CO)5(1-H-benzothiazolin-2-ylidene)] (3) (minor). Complex 2 reacts in a transmetallation reaction with [Rh(coe)2(µ-Cl)]2 (coe = cyclooctone) to give the dicarbene complex [Rh(Cl)(η1-NHC)(η2-NHC)] (NHC = 1-allylbenzothiazolin-2-ylidene) with one carbene ligand coordinated via the C2 carbon atom and the other one coordinating with both the C2 carbon atom and the allyl group.

Key words: Benzothiazole, Benzothiazolin-2-ylidene, Tungsten, Rhodium, Crystal Structure