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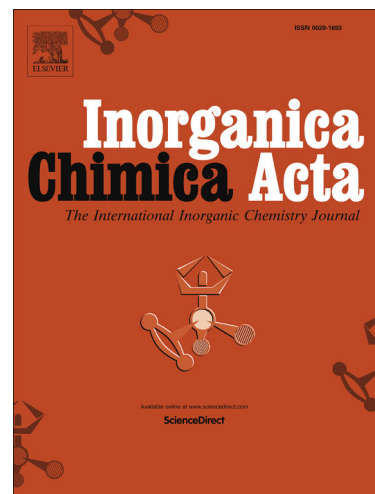
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## Interaction of Benzene-1,2-diamines with Isocyanide Complexes of Palladium(II): Insight into the Mechanism

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### Abstract

Reactivity of 4-toluidine (**2**) and 4,5-dimethylbenzene-1,2-diamine (**3**) were compared in coupling with the palladium-*bis*(isocyanide) complex *cis*-[PdCl<sub>2</sub>(CNXyl)<sub>2</sub>] (Xyl = 2,6-Me<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, **1**), mixed isocyanide/diaminocarbene species *cis*-[PdCl<sub>2</sub>(CNXyl){C(NHXyl)=NH(4-C<sub>6</sub>H<sub>4</sub>CH<sub>3</sub>)}] (**4**), and *cis*-[PdCl(CNXyl){C(NHXyl)=NHC<sub>6</sub>H<sub>2</sub>(Me)<sub>2</sub>NH<sub>2</sub>}]Cl (**5**). In these Pd(II)-mediated reactions, 4,5-dimethylbenzene-1,2-diamine (**3**) was significantly more reactive than 4-toluidine (**2**), leading to the first mixed *bis*(diaminocarbene) complex *cis*-[PdCl{C(NHR)=NHC<sub>6</sub>H<sub>2</sub>X<sub>2</sub>NH<sub>2</sub>}]{C(NHXyl)=NH(4-C<sub>6</sub>H<sub>4</sub>CH<sub>3</sub>)}]Cl (**6**) containing two different diaminocarbene ligands. Complex **6** was isolated and characterized by elemental analyses (C, H, N), HRESI<sup>+</sup>-MS, IR, <sup>1</sup>H and <sup>13</sup>C{<sup>1</sup>H} NMR spectroscopies, and single-crystal X-ray diffraction.

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