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# Synthesis, Characterization of Cyclopalladated Complexe and Its application as Efficient Catalysts for Suzuki-Miyaura and Heck-Mizoroki Coupling Reactions

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Palladium-catalyzed cross-coupling reactions are one of the most important carbon-carbon bond forming processes[1-2]. Nowadays, the Suzuki Miyaura cross-coupling reaction has become a standard tool in natural product synthesis[1.2]. The development of new ligands lead to improvements but also the design of new precatalyst structures can increase the catalytic activity as they initiate the formation of the catalytically active species in the cross-coupling reaction. It is often reported in the literature that the palladium complexes show a better catalytically activities. Several air-stable (NHC)-palladium(II) precatalysts have been reported. (NHC)-palladium(II) complexes with cyclometalating ligands such as N,N-dimethyl-2-aminobiphenyl and 2- Phenylpyridine and others show high catalytic activities in various cross-coupling reactions[3-4].

Herein, we prepared novel cyclometalated Pd(II) complex, [Pd(ppy)(phen-dione)]$PF_6$ where ppy is 2- phenylpyridine and phen-dione is 1,10-phenanthroline-5,6-dione, and characterized by elemental analyses , IR, $^1H$, and $^{13}C$ NMR techniques. It was found that this compound can act as an efficient catalyst in C-C bond formation between various aryl halides with phenylboronic acid (Suzuki-Miyaura reaction) and aryl halides with n-butyl acrylate (Heck–Mizorokireaction).

***Keywords:***Palladium-catalyzed, Cyclometalated complex, Suzuki Reaction, Heck Reaction

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