

Accepted Manuscript

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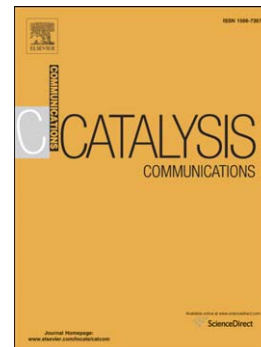
PII: S1566-7367(13)00165-9
DOI: doi: [10.1016/j.catcom.2013.04.028](https://doi.org/10.1016/j.catcom.2013.04.028)
Reference: CATCOM 3493

To appear in: *Catalysis Communications*

Received date: 28 February 2013
Revised date: 9 April 2013
Accepted date: 27 April 2013

Please cite this article as: Dhandapani Ganapathy, Govindasamy Sekar, Palladium nanoparticles stabilized by metal-carbon covalent bond: An efficient and reusable nanocatalyst in cross-coupling reactions, *Catalysis Communications* (2013), doi: [10.1016/j.catcom.2013.04.028](https://doi.org/10.1016/j.catcom.2013.04.028)

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Palladium nanoparticles stabilized by metal-carbon covalent bond: an efficient and reusable nanocatalyst in cross-coupling reactions

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Abstract

Palladium nanoparticles stabilized by Pd-C_(binaphthyl) covalent bonds have been designed and synthesized. This new class of Pd nanoparticles efficiently used as reusable catalysts for C-C bond forming Heck, Suzuki-Miyaura and Sonogashira cross coupling reactions with high turnover. Even after the several catalytic cycles the Pd NPs had the same reactivity and particle size without any apparent agglomeration.

Keywords

Palladium nanoparticles, Pd-C covalent bond, Nanocatalysis, C-C bond formation, Cross-coupling reaction.

1. Introduction

Palladium catalysts have been proven to be very efficient in C-C bond forming reactions.[1] They play an important role in the synthesis of natural products,[2] agro and pharmaceutical chemicals.[3] In particular, homogeneous palladium catalysts have been extensively studied in synthetic organic chemistry because of their higher activity and selectivity.[4] However, the uses of homogeneous Pd catalysts are limited in large-scale reactions owing to the contamination of products obtained in these reactions with ligands and palladium metal. Also, the enormously

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