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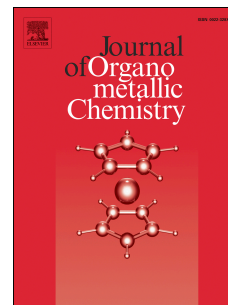
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Ultrasound-Assisted Suzuki-Miyaura Reaction Catalyzed by Pd@Cu₂(NH₂-BDC)₂(DABCO)

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Abstract

The highly porous metal-organic framework Cu₂(NH₂-BDC)₂(DABCO) (BDC=1,4-benzenedicarboxylic acid, and DABCO=diazabicyclooctane) loaded with palladium (Pd@Cu-MOF) was found to be an effective catalyst for Suzuki C-C cross coupling accelerated with ultrasonic irradiation. The structure of the catalyst was investigated by EDX (Energy-dispersive X-ray spectroscopy), TGA (Thermogravimetric analysis), FE-SEM (Field Emission Scanning Electron Microscope), TEM (Transmission electron microscopy), XRD (X-ray powder diffractometry), ICP (Inductively coupled plasma), and BET (Brunauer-Emmett-Teller) methods. It was recoverable and reusable for at least four consecutive reactions.

Keywords:

Metal Organic Framework, Suzuki-Miyaura coupling reaction, Palladium, Ultrasonic

1. Introduction

Biaryl compounds are very useful materials in industry and pharmacology [1-5]. The synthesis of biaryl compounds has attracted many attentions to it. Many different homogenous and heterogeneous palladium based catalysts have been reported for coupling of aryl halides with arylboronic acids in Suzuki-Miyaura reaction [6-8]. The homogeneous palladium catalysts are expensive, difficult to separate from reaction media, and not easily recoverable. Furthermore, the final product is polluted to the metal, which is very dangerous, especially in the pharmaceutical industries [9-14]. Because of the mentioned drawbacks, heterogeneous catalysts gained a lot of attention to themselves. Many different supports such as carbon

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