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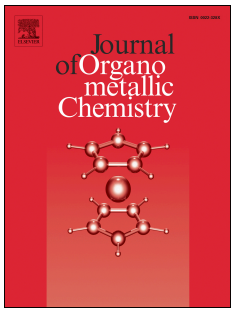

Synthesis of a new class of cationic Pd(II) complexes with 1,2,3-triazol-5-ylidene ligand and their catalytic application in the conversion of internal alkynes to 1,2-diketones

Jeelani Basha Shaik, Venkatachalam Ramkumar, Sethuraman Sankararaman

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Synthesis of a new class of cationic Pd(II) complexes with 1,2,3-triazol-5-ylidene ligand and their catalytic application in the conversion of internal alkynes to 1,2-diketones

Jeelani Basha Shaik, Venkatachalam Ramkumar, Sethuraman Sankararaman*

Department of Chemistry, Indian Instituteof Technology Madras, Chennai 600036, India

Corresponding author: email: sanka@iitm.ac.in, phone: +91 44 2257 4210, fax: +91 44 2257 0545

Abstract

A new class of cationicPd(II) complexes of the type $[Pd(Tz)(Cl)(bipy)]^{+}Cl^{-}$ and $[Pd(Tz)(Cl)(phen)]^{+}Cl^{-}$ (Tz = 1,4-diaryl-3-methyl-1,2,3-triazol-5-ylidene , bipy = 2,2'-bipyridine and phen = 1,10-phenanthroline) with various wing tip groups were synthesized from the corresponding 1,2,3-triazolium iodide via the corresponding chloro bridged dinuclear complexes $[(Tz)(Cl)Pd(\mu\text{-}Cl)_2Pd(Cl)(Tz)]$. The synthesized cationic complexes were screened for their catalytic activity of hydration of alkynes and found to be excellent towards the selective conversion of internal alkynes to the corresponding 1,2-diketones in good yields. A plausible mechanism was proposed for this conversion.

Keywords

Alkyne, cationic Pd complex,1,2-diketone,hydration,NHC-Pd complex,1,2,3-triazol-5-ylidene,

1. Introduction

N-Heterocyclic carbenes (NHCs) have gained exclusive, rapid popularity and emerged as versatile ligands for a wide variety of metal complexes.[1] The success achieved by NHCs is because of their strong *σ*-electron donating capacity which will allow them to form strong NHC-metal bonds. Due to their stability to air, moisture and strong σ-donor but poor π-acceptor abilities NHCs have been receiving a great amount of attention and becoming a very important