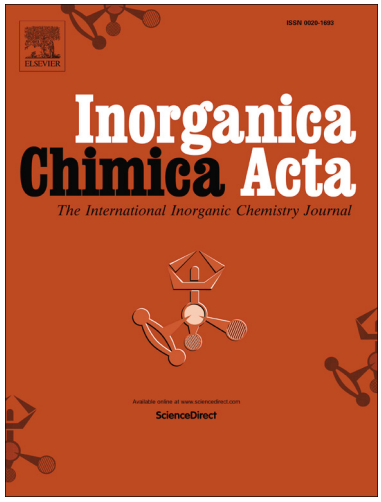

Research paper

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Synthesis, characterization and crystal structure of a diketone based Cu(II) complex and its catalytic activity for the synthesis of 1,2,3-triazoles

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Abstract

The synthesis and characterization of complex [Cu(dppo)$_2$] (dppo = 1,3-diphenylpropane-1,3-dione) is reported. The complex has been fully characterized by FT-IR, UV-Vis, elemental analysis and Cyclic Voltammetry. The paramagnetic nature of the complex was confirmed by magnetic measurement and the square planar geometry was ascertained by single crystal X-ray determination. The complex has been found to be a good homogeneous catalyst for the synthesis of 1,2,3-triazole derivatives *via* one-pot reaction of arylboronic acids, sodium azide and alkynes in DMF.

Keywords: Copper complex, cycloaddition, 1,2,3-triazoles

Introduction

1,2,3-Triazoles, a nitrogen-containing five membered heterocyclic compounds have received much interest in the field of medicinal and material chemistry [1]. These compounds have also found applications in synthesis of various agrochemicals, dyes, corrosion inhibitors, biochemicals, polymers and other functional materials like photo-stabilizers and photographic materials [2]. A literature survey indicates that there are several methods available for the synthesis of 1,2,3-triazole derivatives (Scheme 1) [3-10]. The classical method involves the thermal 1,3-dipolar cycloaddition of organic azides with alkynes, discovered by Huisgen in 1963 [11]. Owing to elevated temperature, low yields and lack of selectivity, Sharpless [12] and Meldal [13] modified the method and found that 1,3-dipolar cycloaddition of organic azides with alkynes could be accelerated by using Cu(I) complexes as catalyst [14]. Although initial reports were based on the active Cu(I) catalysts, other workers also used Cu(II) species in these