

## Accepted Manuscript

Research paper

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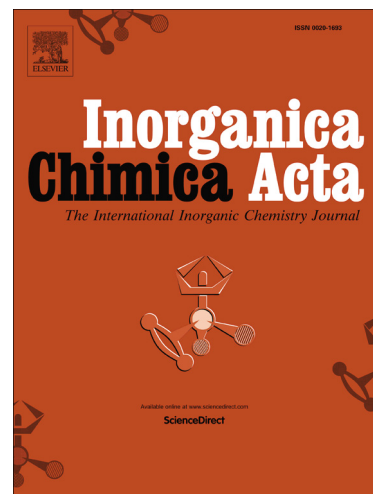
PII: S0020-1693(17)31701-2  
DOI: <https://doi.org/10.1016/j.ica.2018.06.032>  
Reference: ICA 18324

To appear in: *Inorganica Chimica Acta*

Received Date: 4 November 2017  
Revised Date: 23 May 2018  
Accepted Date: 19 June 2018

Please cite this article as: M. Amini, S. Najafi, J. Janczak, Copper (I) complex of 2,9-dimethyl-1,10-phenanthroline: synthesis, structure, and catalytic properties, *Inorganica Chimica Acta* (2018), doi: <https://doi.org/10.1016/j.ica.2018.06.032>

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# Copper (I) complex of 2,9-dimethyl-1,10-phenanthroline: synthesis, structure, and catalytic properties

Mojtaba Amini,<sup>\*a</sup> Shabnam Najafi,<sup>a</sup> Jan Janczak<sup>b</sup>

<sup>a</sup>*Department of Chemistry, Faculty of Science, University of Maragheh, Maragheh, Iran*

<sup>b</sup>*Institute of Low Temperature and Structure Research, Polish Academy of Sciences, P.O.Box 1410 Okolna 2 str., 50-950 Wroclaw, Poland*

Dedicated to Professor Mojtaba Bagherzadeh, my dear supervisor at Sharif University of Technology, for the helpful guidances, encouragement and valuable comments he has been providing me to improve my scientific level and life issues.

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## Abstract

A copper (I) complex containing 2,9-dimethyl-1,10-phenanthroline (dmph),  $[\text{Cu}(\text{dmph})_2]\text{Cl}\cdot 6\text{H}_2\text{O}$ , was prepared by reaction of  $\text{CuCl}_2\cdot 2\text{H}_2\text{O}$  and 2,9-dimethyl-1,10-phenanthroline in an aqueous solution at pH=11 and characterized using elemental analysis, IR, EDX and X-ray crystallography. The complex consists of a mononuclear copper (I) surrounded by four coordinating nitrogen atoms of two dmph ligands, one  $\text{Cl}^-$  anion and six  $\text{H}_2\text{O}$  molecules. This novel copper (I) complex was used as a catalyst for alkyne–azide cycloaddition (CuAAC) reaction to produce several 1,2,3-triazoles in high yields. The presented catalytic system fulfils the requirements of “click chemistry” with its soft and appropriate conditions, notably in water as solvent with low catalyst amount without any co-catalyst or activator.

**Keywords:** *Complex; Copper; Phenanthroline; Azide- alkyne cycloaddition*

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## Introduction

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\* Corresponding authors; Tel.: +98 41 37278900; Fax: +98 41 37276066. Email address: [mamini@maragheh.ac.ir](mailto:mamini@maragheh.ac.ir)

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