

Green catalytic synthesis of symmetric and non-symmetric β -hydroxy-1,2,3-triazoles by using epichlorohydrin in the presence of Cu(II) coordination compounds containing oxazole ligands

Autorzy

Fatemeh Ajormal
Rahman Bikas
Nader Noshiranzadeh
Anna Kozakiewicz-Piekarz
Tadeusz Lis

Rok wydania

2022

Czasopismo

New Journal of Chemistry

Numer woluminu

46

Strony

19468-19481

DOI

10.1039/d2nj03826a

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Three Cu(II) coordination compounds, $[\text{Cu}(\text{L}^1)(\text{Cl}_2)]$ (**1**), $[\text{Cu}(\text{L}^1)(\text{Br}_2)]$ (**2**), and $[\text{Cu}(\text{L}^2)(\text{Cl})]\text{Cl} \cdot (\text{C}_2\text{H}_4\text{O}_3)_{0.5}(\text{H}_2\text{O})_{0.5}$ (**3**), were synthesized and characterized by various spectroscopic methods and single crystal X-ray analysis where L^1 and L^2 are oxazolo[3,4-c]oxazole ligands containing a pyridine ring. These compounds were synthesized by two methods including the reaction of copper salt with a pre-synthesized ligand and also the reaction of copper salt with raw materials for the synthesis of the ligands. The results indicated that Cu(II) ions have a catalytic effect on the formation of oxazolo[3,4-c]oxazole ligands. The resulting coordination compounds were used as catalysts for the green synthesis of symmetric and non-symmetric 1,2,3-triazoles by an azide–phenylacetylene–epichlorohydrin cycloaddition reaction. The catalytic reactions were performed in water as a green solvent and the effects of some parameters like the ratio of the reagents, the temperature of the reaction, and also the structure of catalysts were investigated. The results showed that an epoxide ring has higher activity than alkyl chloride functionality for the *in situ* production of organic azides. Also, it was found that both symmetric and non-symmetric 1,2,3-triazoles can be synthesized by controlling the reaction conditions under mild and green conditions.

Adres publiczny

<http://dx.doi.org/10.1039/d2nj03826a>

Strona internetowa wydawcy

<https://www.rsc.org/>