

Facile synthesis of a luminescent copper(I) coordination polymer containing a flexible benzotriazole-based ligand: An effective catalyst for three-component azide-alkyne cycloaddition

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A straightforward method for the synthesis of a new luminescent copper(I) coordination polymer (CP) containing the ligand 1,3-bis(1H-benzotriazol-1-ylmethyl)benzene (L) through a self-assembly process with copper(I) iodide is reported. The CP was characterized by infrared, NMR, UV-Vis and photoluminescence spectroscopy, high resolution mass spectrometry (ESI), elemental and thermogravimetric analyses, single-crystal and powder X-ray diffraction, and relativistic density functional theory calculations. Furthermore, this one-dimensional copper(I) benzotriazole-based coordination polymer catalyzed the three-component azide-alkyne cycloaddition reaction to obtain 1,4-disubstituted 1,2,3-triazoles in good to excellent yields (up to 95%) from organic halides, sodium azide and terminal alkynes. © 2019 Elsevier B.V.

Azide-alkyne cycloaddition

Catalysis

Click chemistry

Copper(I) coordination polymer

Luminescence

Benzene refining

Catalysis

Chelation

Cycloaddition

Density functional theory

Hydrocarbons

Ligands

Luminescence

Mass spectrometry

Photoluminescence spectroscopy

Polymers

Single crystals

Sodium Azide

Thermogravimetric analysis

Azide-alkyne cycloaddition

Click chemistry

Coordination Polymers

High resolution mass spectrometry

Relativistic density functional theory

Self assembly process

Single-crystal and powder

Straight-forward method

Copper compounds