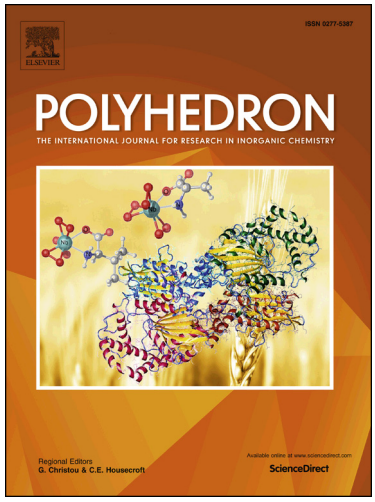

H-Bonding Dependent Phosphorescence in a Mixed Ligand Copper(I) Complex

Sara Durini, G. Attilio Ardizzoia, Gioele Colombo, Bruno Therrien, Stefano Brenna

PII: S0277-5387(17)30686-1
DOI: https://doi.org/10.1016/j.poly.2017.10.025
Reference: POLY 12888

To appear in: *Polyhedron*

Received Date: 25 September 2017
Accepted Date: 22 October 2017

Please cite this article as: S. Durini, G.A. Ardizzoia, G. Colombo, B. Therrien, S. Brenna, H-Bonding Dependent Phosphorescence in a Mixed Ligand Copper(I) Complex, *Polyhedron* (2017), doi: https://doi.org/10.1016/j.poly.2017.10.025

H-Bonding Dependent Phosphorescence in a Mixed Ligand Copper(I) Complex

Sara Durini,[a,b] G. Attilio Ardizzoia,[b] Gioele Colombo,[b] Bruno Therrien[c] and Stefano Brenna[b]*

[a] Universität Leipzig, Fakultät für Chemie und Mineralogie, Institut für Anorganische Chemie, Johannisallee 29, D-04103 Leipzig
[b] Dipartimento di Scienza e Alta Tecnologia, Università degli Studi dell'Insubria and CIRCC, Via Valleggio, 9 - 22100 Como, Italy
[c] Institute of Chemistry, Université de Neuchâtel, Avenue de Bellevaux 51, CH-2000 Neuchâtel, Switzerland

Keywords: Copper(I); Hydrogen Bonds; Phosphorescence; Crystal structure; Lactate; α-hydroxycarboxylates

Corresponding author: Stefano Brenna
Tel.: +39-(0)31-2386476; Fax: +39-(0)31-2386119; e-mail address: stefano.brenna@uninsubria.it

Abstract

The mixed ligand copper(I) derivative [$Cu(PPh_3)_2(\kappa^2$-O,O″-lact)] (**1**) (lact = L-(+)-lactate) has been prepared and fully characterized. NMR studies indicated the occurrence of a fluxional behavior involving the lactate anion, in solution. The α-hydroxycarboxylate ligand is responsible for the generation of a catemeric O-H···O(CO) H-bonding network that strongly influences the photophysical properties of **1**, in the solid state. Indeed, when irradiated with UV light the title compound shows a bright phosphorescence, which as suggested by DFT calculations is strictly related to the abovementioned H-bonding network.