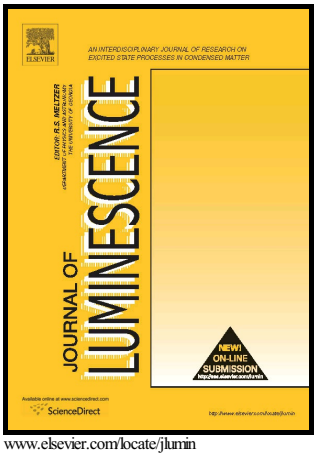
Thermally Activated Delayed Fluorescence of Copper(I) Complexes using *N, N'*-heteroaromatic of 2-(5-phenyl-1,2,3- triazole)pyridine as ligand

Xu Huixia, Yang Tingting, Wang Fang, Zhang Jing, Zhang Xinwen, Wang Hua, Xu Bingshe



www.elsevier.com/locate/jlumin

PII: S0022-2313(18)30873-1
DOI: https://doi.org/10.1016/j.jlumin.2018.08.072
Reference: LUMIN15870

To appear in: *Journal of Luminescence*

Received date: 17 May 2018
Revised date: 22 August 2018
Accepted date: 24 August 2018

Cite this article as: Xu Huixia, Yang Tingting, Wang Fang, Zhang Jing, Zhang Xinwen, Wang Hua and Xu Bingshe, Thermally Activated Delayed Fluorescence of Copper(I) Complexes using *N, N'*-heteroaromatic of 2-(5-phenyl-1,2,3-triazole)pyridine as ligand, *Journal of Luminescence,* https://doi.org/10.1016/j.jlumin.2018.08.072

Thermally Activated Delayed Fluorescence of Copper(I) Complexes using *N, N'*-heteroaromatic of 2-(5-phenyl-1,2,3- triazole)pyridine as ligand

Xu Huixia [1, 2] *, Yang Tingting [3*], Wang Fang [1, 2], Zhang Jing [1, 2], Zhang Xinwen [4*], Wang Hua [1, 2], Xu Bingshe [1, 2]

[1] Key Laboratory of Interface Science and Engineering in Advanced Materials, Ministry of Education, Taiyuan University of Technology, Taiyuan 030024, China;

[2] Shanxi Research Center of Advanced Materials Science and Technology, Taiyuan 030024, China;

[3] School of Physics and Electronic Science, Shanxi Datong University, Datong 037009, P. R. China;

[4] Key Laboratory for Organic Electronics & Information Displays, Institute of Advanced Materials, Nanjing University of Posts & Telecommunications, Nanjing 210023, China

Abstract

Two Cu(I) complexes of **[Cu(PPh$_3$)$_2$(pptz)]BF$_4$** and **[Cu(POP)(pptz)]BF$_4$** using 2-(5-phenyl-1,2,3-three triazole)pyridine (pptzH), triphenyl phosphine (pph$_3$) and (bis-[2-(diphenyl phosphino) phenyl]ether) (POP) as ligands were synthesized and characterized. The complexes **[Cu(PPh$_3$)$_2$(pptz)]BF$_4$** and **[Cu(POP)(pptz)]BF$_4$** exhibit thermally activated delayed fluorescence (TADF) features with photoluminescence quantum yields (ϕ_{PL}) of 89.87 and 27.82 % at room temperature in solid state. The maximum emission peak of **[Cu(PPh$_3$)$_2$(pptz)]BF$_4$** is located at 490 nm. The solution-processing organic-light emitting devices (OLEDs) were fabricated by using **[Cu(PPh$_3$)$_2$(pptz)]BF$_4$** and **[Cu(POP)(pptz)]BF$_4$** as emitters and

Xu Huixia: xuhuixia@tyut.edu.cn; Yang Tingting: yangtt06000786@163.com; Zhang Xinwen: iamxwzhang@njupt.edu.cn