

Accepted Manuscript

Luminescent Ir(III) complexes bearing benzothiazole or benzoxazole-based pincer ligand

Junpei Kuwabara, Tomomi Namekawa, Eiko Sakabe, Masa-aki Haga, Takaki Kanbara



PII: S0022-328X(17)30275-9

DOI: [10.1016/j.jorganchem.2017.04.037](https://doi.org/10.1016/j.jorganchem.2017.04.037)

Reference: JOM 19924

To appear in: *Journal of Organometallic Chemistry*

Received Date: 30 January 2017

Revised Date: 22 April 2017

Accepted Date: 28 April 2017

Please cite this article as: J. Kuwabara, T. Namekawa, E. Sakabe, M.-a. Haga, T. Kanbara, Luminescent Ir(III) complexes bearing benzothiazole or benzoxazole-based pincer ligand, *Journal of Organometallic Chemistry* (2017), doi: 10.1016/j.jorganchem.2017.04.037.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Luminescent Ir(III) complexes bearing benzothiazole or benzoxazole-based pincer ligand

Junpei Kuwabara,^a Tomomi Namekawa,^a Eiko Sakabe,^b Masa-aki Haga,^{*b} Takaki Kanbara^{*a}

^a*Tsukuba Research Center for Interdisciplinary Materials Science (TIMS), Graduate School of Pure and Applied Sciences, University of Tsukuba, 1-1-1, Tennodai, Tsukuba, Japan;*

^b*Department of Applied Chemistry, Faculty of Science and Engineering, Chuo University, 1-13-27, Kasuga, Bunkyo-ku, Tokyo, Japan.*

E-mail: mhaga@kc.chuo-u.ac.jp; kanbara@ims.tsukuba.ac.jp

ABSTRACT

Ir complexes bearing pincer ligands are expected to be efficient phosphorescent materials. This work investigated the solid-state structures and photophysical properties of Ir(III) complexes that contain different NCN pincer ligands (NCN = 1,3-bis(2-benzothiazolyl)benzene, 1,3-bis(2-benzoxazolyl)benzene, or 1,3-bis(2-benzimidazolyl)benzene derivatives), bidentate cyclometalating NC ligands (NC = 2-phenylpyridine or 2-phenylbenzothiazole), and anionic ancillary ligands. The structure of the NCN pincer ligands is a dominant factor for determining the emission wavelength, rather than the bidentate NC and ancillary ligands. The organic light emitting diodes (OLEDs) with an Ir(III) complex show electroluminescence with 14% external quantum efficiency at 1 mAcm⁻². Modification of the device structure improved the efficiency at the high current density region.

Keywords: Pincer complex; Photoluminescence; Electroluminescence; Ir(III) complex; OLEDs.

1. Introduction

Cyclometalating tridentate ligands (so-called pincer ligands) provide high stability, unique catalytic activity, and efficient luminescent properties to transition-metal complexes [1–5]. Nitrogen-based NCN and CNN pincer ligands have been used to develop Pt complexes showing highly efficient phosphorescence [2,6]. Williams and Haga independently developed Ir complexes bearing NCN

Download English Version:

<https://daneshyari.com/en/article/5152874>

Download Persian Version:

<https://daneshyari.com/article/5152874>

[Daneshyari.com](https://daneshyari.com)