

# The crystal structures and chiral luminescence of three Iridium(III) complexes with the maximum EQE of 10.7% at 5000 cd/m<sup>2</sup>

Junjian Lu<sup>1</sup>, Gan Cheng<sup>1</sup>, and Li-ya Zhu<sup>1</sup>

<sup>1</sup>Hunan University of Humanities Science and Technology

June 10, 2022

## Abstract

In this paper, three Iridium(III) complexes, Ir(dnfppy)<sub>2</sub>(Cl/Pyrrole), Ir(dfppy)<sub>2</sub>(dpp) and Ir(tfmqz)<sub>2</sub>(sdpp), have been designed and synthesized. They emitted deep-blue, blue or red photoluminescence with high quantum yields, for ((Ir(dnfppy)<sub>2</sub>(Cl/Pyrrole):  $\lambda_{\max}$  = 447 nm, F = 62.4%; Ir(dfppy)<sub>2</sub>(dpp):  $\lambda_{\max}$  = 467 nm, F = 25%; Ir(tfmqz)<sub>2</sub>(sdpp):  $\lambda_{\max}$  = 609 nm, F = 73.7%), respectively. Two pairs of enantiomers of Ir(dfppy)<sub>2</sub>(dpp) and Ir(tfmqz)<sub>2</sub>(sdpp) have been separated by column chromatography. The maximum external quantum efficiency (EQE<sub>max</sub>) of OLEDs based on Ir(tfmpqz)<sub>2</sub>(sddp) was 13.8%, showing a relatively low efficiency roll-off with the EQE of 10.7% at 5000 cd/m<sup>2</sup>.

## Hosted file

0- paper-2022-04-03.pdf available at <https://authorea.com/users/488165/articles/572411-the-crystal-structures-and-chiral-luminescence-of-three-iridium-iii-complexes-with-the-maximum-eqe-of-10-7-at-5000-cd-m2>