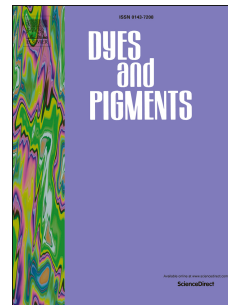


Accepted Manuscript

Tetraphenylethylene-substituted phenothiazine-based AIEgens for non-doped deep-blue organic light-emitting diodes with negligible efficiency roll-off

Jinjin Shi, Lei Xu, Xianhao Lv, Qi Ding, Weizhen Li, Qikun Sun, Shanfeng Xue, Wenjun Yang



PII: S0143-7208(18)31826-6

DOI: [10.1016/j.dyepig.2018.09.033](https://doi.org/10.1016/j.dyepig.2018.09.033)

Reference: DYPI 7015

To appear in: *Dyes and Pigments*

Received Date: 17 August 2018

Revised Date: 14 September 2018

Accepted Date: 14 September 2018

Please cite this article as: Shi J, Xu L, Lv X, Ding Q, Li W, Sun Q, Xue S, Yang W, Tetraphenylethylene-substituted phenothiazine-based AIEgens for non-doped deep-blue organic light-emitting diodes with negligible efficiency roll-off, *Dyes and Pigments* (2018), doi: <https://doi.org/10.1016/j.dyepig.2018.09.033>.

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.

1 **Tetraphenylethylene-Substituted Phenothiazine-based AIEgens for Non-doped**
2 **Deep-Blue Organic Light-Emitting Diodes with Negligible Efficiency Roll-Off**

3 Jinjin Shi, Lei Xu, Xianhao Lv, Qi Ding, Weizhen Li, Qikun Sun, Shanfeng Xue* and
4 Wenjun Yang

5 *Key Laboratory of Rubber-Plastics of Ministry of Education/Shandong Province*
6 *(QUST), School of Polymer Science & Engineering, Qingdao University of Science &*
7 *Technology, 53-Zhengzhou Road, Qingdao 266042, China*

8
9 **Abstract:**

10 Deep-blue organic light-emitting diodes (OLEDs) with low efficiency roll-off and
11 high color purity are critical for the tetraphenylethylene-based AIEgens derivative. In
12 this work, the novel blue emitter,
13 3-(1-phenyl-1*H*-phenanthro[9,10-*d*]imidazol-2-yl)-10-(4-(1,2,2-triphenylvinyl)phenyl
14)-10*H*-phenothiazine (TPEPPI), was designed and synthesized to develop a new
15 material possessing aggregation-induced emission (AIE) characteristics and deep-blue
16 emission. The TPEPPI hardly emits fluorescence in tetrahydrofuran (THF), the
17 luminescence intensity increased by 5.5 times when the water content reaches 95%,
18 showing strong fluorescence in aggregated state. Three different non-doped device
19 structures were fabricated, all of the OLEDs showed deep-blue emission (~460 nm).
20 The optimized device III exhibited an emission peak at 467 nm, a maximum current
21 efficiency of 4.25 cd A⁻¹, a maximum power efficiency of 3.35 lm W⁻¹, a maximum
22 luminance of 16750 cd m⁻², a maximum external quantum efficiency of 2.36%, and
23 the essentially negligible efficiency roll-off of 3.3%, which is the first observation of

Download English Version:

<https://daneshyari.com/en/article/10225161>

Download Persian Version:

<https://daneshyari.com/article/10225161>

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