

Web of Science

[Full Text from Publisher](#) |
 [Look Up Full Text](#) |
 |
 Save to EndNote online |
 [Add to Marked List](#)

53 of 491

Effect of arylamine hole-transport units on the performance of blue polypirobifluorene light-emitting diodes

By: [Abbaszadeh, D](#) (Abbaszadeh, Davood)^[1,2]; [Nicolai, HT](#) (Nicolai, Herman T.)^[3]; [Craciun, NI](#) (Craciun, N. Irina)^[4]; [Blom, PWM](#) (Blom, Paul W. M.)^[4,5]
[View ResearcherID and ORCID](#)

PHYSICAL REVIEW B

Volume: 90 Issue: 20
 Article Number: 205204
 DOI: 10.1103/PhysRevB.90.205204
 Published: NOV 5 2014
[View Journal Impact](#)

Abstract

The operation of blue light-emitting diodes based on polypirobifluorene with a varying number of N,N,N', N' tetraaryldiamino biphenyl (TAD) hole-transport units (HTUs) is investigated. Assuming that the electron transport is not affected by the incorporation of TAD units, model calculations predict that a concentration of 5% HTU leads to an optimal efficiency for this blue-emitting polymer. However, experimentally an optimum performance is achieved for 10% TAD HTUs. Analysis of the transport and recombination shows that polymer light-emitting diodes with 5%, 7.5%, and 12.5% TAD units follow the predicted behavior. The enhanced performance of the polymer with 10% TAD originates from a decrease in the number of electron traps, which is typically a factor of three lower than the universal value found in many polymers. This reduced number of traps leads to a reduction of nonradiative recombination and exciton quenching at the cathode.

Keywords

Keywords Plus: RECOMBINATION; POLYFLUORENE; COPOLYMERS

Author Information

Reprint Address: Abbaszadeh, D (reprint author)

+ Univ Groningen, Zernike Inst Adv Mat, Nijenborgh 4, NL-9747 AG Groningen, Netherlands.

Addresses:

- + [1] Univ Groningen, Zernike Inst Adv Mat, NL-9747 AG Groningen, Netherlands
- [2] Dutch Polymer Inst, NL-5600 AX Eindhoven, Netherlands
- + [3] TNO Holst Ctr, NL-5605 KN Eindhoven, Netherlands
- + [4] Max Planck Inst Polymer Res, D-55128 Mainz, Germany
- + [5] King Abdulaziz Univ, Fac Sci, Dept Phys, Jeddah 22254, Saudi Arabia

Funding

Funding Agency	Grant Number
Dutch Polymer Institute (DPI)	733

[View funding text](#)

Publisher

AMER PHYSICAL SOC, ONE PHYSICS ELLIPSE, COLLEGE PK, MD 20740-3844 USA

Categories / Classification

Research Areas: Physics

Citation Network

3 Times Cited
 23 Cited References
[View Related Records](#)
[Create Citation Alert](#)
(data from Web of Science Core Collection)

All Times Cited Counts

3 in All Databases
 3 in Web of Science Core Collection
 0 in BIOSIS Citation Index
 0 in Chinese Science Citation Database
 0 in Data Citation Index
 0 in Russian Science Citation Index
 0 in SciELO Citation Index

Usage Count

Last 180 Days: 2
 Since 2013: 27
[Learn more](#)

Most Recent Citation

Kasperek, C. [Solution-processed multilayer polymer light-emitting diode without intermixing](#). APPLIED PHYSICS LETTERS, JAN 9 2017.
[View All](#)

This record is from:

Web of Science Core Collection
 - Science Citation Index Expanded

Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

Web of Science Categories: Physics, Condensed Matter

Document Information

Document Type: Article

Language: English

Accession Number: WOS:000345171300006

ISSN: 1098-0121

eISSN: 1550-235X

Journal Information

Table of Contents: [Current Contents Connect](#)

Other Information

IDS Number: AT8GG

Cited References in Web of Science Core Collection: **23**

Times Cited in Web of Science Core Collection: **3**

