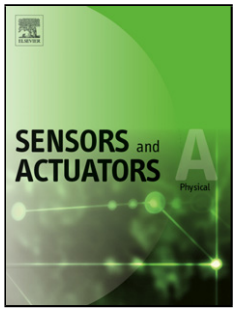

Title: Investigation of VTP:$PC_{71}BM$ organic composite as highly responsive organic photodetector

Authors: Nur Adilah Roslan, Shahino Mah Abdullah, Wan Haliza Wan Majid, Azzuliani Supangat

PII: S0924-4247(18)30360-1
DOI: https://doi.org/10.1016/j.sna.2018.06.044
Reference: SNA 10849

To appear in: *Sensors and Actuators A*

Received date: 14-3-2018
Revised date: 5-6-2018
Accepted date: 25-6-2018

Please cite this article as: Roslan NA, Abdullah SM, Majid WHW, Supangat A, Investigation of VTP:$PC_{71}BM$ organic composite as highly responsive organic photodetector, *Sensors and Actuators: A. Physical* (2018), https://doi.org/10.1016/j.sna.2018.06.044

Investigation of VTP:$PC_{71}BM$ organic composite as highly responsive organic photodetector

Nur Adilah Roslan[1], Shahino Mah Abdullah[1], Wan Haliza Wan Majid[2], Azzuliani Supangat[2*]

[1]*Department of Physics, Faculty of Science, University of Malaya, Kuala Lumpur 50603, Malaysia*
[2]*Low Dimensional Materials Research Centre, Department of Physics, Faculty of Science, University of Malaya, Kuala Lumpur 50603, Malaysia*

***Corresponding Authors:**

E-mail: azzuliani@um.edu.my

Phone: +603-79672737

Highlights:

- Effect of different ratios of new composite blend, VTP:$PC_{71}BM$ on the optical study are studied.
- A newly composite blend of VTP:$PC_{71}BM$ has been successfully fabricated and utilized as an organic photodetector (OPD)
- The detector exhibits good photocurrent-illumination linearity, fast response-recovery time, and high consistency towards the rapid change of light intensities.

Abstract

In this work, we report the use of vanadyl 3,10,17,24-tetra-tert-butyl-1,8,15,22-tetrakis(dimethylamino)-29H,31H-phthalocyanine (VTP) in the fabrication of organic photodetector that aimed to be more responsive in the lower region of visible light. The thin active layer of the photodetector has been developed from the vanadyl 3,10,17,24-tetra-tert-butyl-1,8,15,22-tetrakis(dimethylamino)-29H,31H-phthalocyanine (VTP):[6,6]-phenyl C71 butyric acid methyl ester ($PC_{71}BM$) blend solution. The combination of VTP and $PC_{71}BM$ has significantly enhanced the absorption of visible light especially below 650 nm for the ITO/PEDOT:PSS/VTP:$PC_{71}BM$/Al photodetector. The detector showed good