

Substrate Dependent Growth of DH6T Small Molecules in Vapor Deposited Thin Films

International Workshop on the Physics of Semiconductor and Devices

IWPSD 2017: The Physics of Semiconductor Devices pp 967-971 | Cite as

- C. Shalu (1)
- S. Raj Mohan (2)
- Mukesh P. Joshi (2)
- Vipul Singh (1) Email author (vipul@iiti.ac.in)

1. Molecular and Nanoelectronics Research Group (MNRG), Discipline of Electrical Engineering, IIT Indore, , Indore, India

2. Laser Materials & Processing Division, Raja Ramanna Center for Advanced Technology, , Indore, India

Conference paper

First Online: 01 February 2019

- 1.6k Downloads

Part of the [Springer Proceedings in Physics](#) book series (SPPHY, volume 215)

Abstract

Substrate dependent growth of DH6T small molecules in the evaporated thin films was studied in order to speculate the role of substrate. XRD data revealed that films grown on both glass and silicon substrates are well ordered, and crystalline in nature with relatively more crystallinity on silicon substrates rather than glass substrate. AFM study showed that step like circular domains with height almost equal to molecular length are formed on both substrates and the grain size is larger on the silicon substrate than on glass. Photoluminescence studies showed that intermolecular interaction is more in the thin films evaporated on silicon substrate.

This is a preview of subscription content, [log in](#) to check access.

Notes

Acknowledgements

Authors are grateful to Sophisticated Instrument Centre, IIT Indore for providing XRD facilities. One of the authors, Shalu C. thanks to Ministry of Human Resource and Development (MHRD), India for providing the Teaching Assistantship (TA) to carry

out this research work. Author, V. S. would like to thank the director, IIT Indore for providing his constant support and encouragement for research.

References

1. A. Yassar, Exciton coupling effects in the absorption and photoluminescence of sexithiophene derivatives. *J. Phys. Chem.* **99**, 9155–9159 (1995)
CrossRef (<https://doi.org/10.1021/j100022a031>)
Google Scholar (http://scholar.google.com/scholar_lookup?title=Exciton%20Coupling%20Effects%20in%20the%20Absorption%20and%20Photoluminescence%20of%20Sexithiophene%20Derivatives&author=A.%20Yassar&author=G.%20Horowitz&author=P.%20Valat&author=V.%20Wintgens&author=M.%20Hmyene&author=F.%20Deloffre&author=P.%20Srivastava&author=P.%20Lang&author=F.%20Garnier&journal=The%20Journal%20of%20Physical%20Chemistry&volume=99&issue=22&pages=9155-9159&publication_year=1995)
2. J. Ivanco, Sexithiophene films on clean and oxidized Si(111)Si(111) surfaces: growth and electronic structure. *J. Appl. Phys.* **96**, 2716–2724 (2004)
ADS (http://adsabs.harvard.edu/cgi-bin/nph-data_query?link_type=ABSTRACT&bibcode=2004JAP....96.2716I)
CrossRef (<https://doi.org/10.1063/1.1775304>)
Google Scholar (http://scholar.google.com/scholar_lookup?title=Sexithiophene%20films%20on%20clean%20and%20oxidized%20Si%28111%29Si%28111%29%20surfaces%3A%20growth%20and%20electronic%20structure&author=J.%20Ivanco&journal=J.%20Appl.%20Phys.&volume=96&pages=2716-2724&publication_year=2004)
3. M.E. Roberts, Water-stable organic transistors and their application in chemical and biological sensors. *Proc. Natl. Acad. Sci.* **105**, 12134 (2008)
ADS (http://adsabs.harvard.edu/cgi-bin/nph-data_query?link_type=ABSTRACT&bibcode=2008PNAS..10512134R)
CrossRef (<https://doi.org/10.1073/pnas.0802105105>)
Google Scholar (http://scholar.google.com/scholar_lookup?title=Water-stable%20organic%20transistors%20and%20their%20application%20in%20chemical%20and%20biological%20sensors&author=ME.%20Roberts&journal=Proc.%20Natl.%20Acad.%20Sci.&volume=105&pages=12134&publication_year=2008)
4. Y. Jang, Influence of the dielectric constant of a polyvinyl phenol insulator on the field-effect mobility of a pentacene-based thin-film transistor. *Appl. Phys. Lett.* **87**, 152105 (2005)
ADS (http://adsabs.harvard.edu/cgi-bin/nph-data_query?link_type=ABSTRACT&bibcode=2005ApPhL..8702105J)
CrossRef (<https://doi.org/10.1063/1.2093940>)
Google Scholar (http://scholar.google.com/scholar_lookup?title=Influence%20of%20the%20dielectric%20constant%20of%20a%20polyvinyl%20phenol%20insulator%20on%20the%20field-effect%20mobility%20of%20a%20pentacene-based%20thin-film%20transistor&author=Y.%20Jang&journal=Appl.%20Phys.%20Lett.&volume=87&pages=152105&publication_year=2005)

Copyright information

© Springer Nature Switzerland AG 2019

About this paper

Cite this paper as:

Shalu C., Raj Mohan S., Joshi M.P., Singh V. (2019) Substrate Dependent Growth of DH6T Small Molecules in Vapor Deposited Thin Films. In: Sharma R., Rawal D. (eds) The Physics of Semiconductor Devices. IWPSD 2017. Springer Proceedings in Physics, vol 215. Springer, Cham. https://doi.org/10.1007/978-3-319-97604-4_147

- First Online 01 February 2019
- DOI https://doi.org/10.1007/978-3-319-97604-4_147
- Publisher Name Springer, Cham
- Print ISBN 978-3-319-97603-7
- Online ISBN 978-3-319-97604-4
- eBook Packages [Physics and Astronomy](#), [Physics and Astronomy \(Ro\)](#)
- [Buy this book on publisher's site](#)
- [Reprints and Permissions](#)

Personalised recommendations

SPRINGER NATURE

© 2020 Springer Nature Switzerland AG. Part of [Springer Nature](#).

Not logged in Not affiliated 106.223.178.159