

## Investigation of functionalised thin films of DNA:PEDT-PSS - electrical and optical properties

Submitted by Emmanuel Lemoine on Tue, 02/04/2014 - 16:35

Titre	Investigation of functionalised thin films of DNA:PEDT-PSS - electrical and optical properties
Type de publication	Communication
Type	Communication avec actes dans un congrès
Année	2009
Langue	Anglais
Date du colloque	2009
Titre du colloque	3rd ICTON Mediterranean Winter Conference, ICTON-MW 2009
Titre des actes ou de la revue	ICTON-MW 2009
Pagination	1 - 5
Auteur	Kažukauskas, Vaidotas [1], Arlauskas, Andrius [2], Pranaitis, Mindaugas [3], Krupka, Oksana [4], Kajzar, François [5], Essaidi, Zacaria [6], Sahraoui, Bouchta [7]
Pays	France
Editeur	IEEE Computer Society
Ville	Angers
ISBN	978-1-4244-5745-8 / 978-1-4244-5746-5
Mots-clés	carrier recombination [8], carrier trapping [9], charge carrier trapping [10], charge transport [11], Conducting materials [12], Conductivity measurement [13], Cooling [14], current-voltage dependencies [15], dark conductivity [16], deoxyribonucleic acid (DNA) [17], DNA [18], DNA:PEDT-PSS [19], electrical and photoconductivity [20], electrical properties [21], electron traps [22], electron-hole recombination [23], Energy measurement [24], functionalised thin films [25], infrared spectra [26], light absorption [27], light-induced morphology changes [28], molecular biophysics [29], Optical bistability [30], optical films [31], Optical materials [32], Optical properties [33], photoconduction [34], photoconductivity [35], photocurrent [36], photosensitivity [37], poly(3,4-ethylenedioxythiophene) (PEDT) [38], poly(styrenesulfonate) (PSS) [39], polymer films [40], temperature 293 K to 298 K [41], Temperature dependence [42], thermal activation energy [43], Thermal conductivity [44], thermally stimulated current method [45], thermally stimulated currents [46], ultraviolet spectra [47], Visible spectra [48]

Résumé en  
anglais

We have investigated electrical, charge transport and optical properties of functionalised DNA:PEDT-PSS thin films. Current-voltage dependencies of the samples were linear and symmetrical down to 77 K temperature. Material conductivity at room temperature was about  $(1-5) \times 10^{-10} \text{ cm}^{-1}$ . The thermal activation energy of the conductivity measured in the dark was about 0.033 eV near the room temperature independently on the applied bias. The weakly expressed carrier trapping was identified by the thermally stimulated current method, evidencing the fast recombination of light-generated carriers. Though, at constant light excitation a "bistable" photoconduction below the room temperature was identified. I.e., upon excitation by light from the spectral region 500 800 nm a notable increase of the photocurrent could be observed below 140 160 K by cooling the samples. Meanwhile by heating the photosensitivity remained increased up to 230 240 K. Most probably such phenomenon could be attributed to the light-induced morphology changes of the samples.

Notes

Date du colloque : 12/2009

URL de la  
notice

<http://okina.univ-angers.fr/publications/ua2136> [49]

DOI

10.1109/ICTONMW.2009.5385540 [50]

Lien vers le

document en <http://dx.doi.org/10.1109/ICTONMW.2009.5385540> [50]  
ligne

---

## Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=2830](http://okina.univ-angers.fr/publications?f[author]=2830)
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=2831](http://okina.univ-angers.fr/publications?f[author]=2831)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=3683](http://okina.univ-angers.fr/publications?f[author]=3683)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=2668](http://okina.univ-angers.fr/publications?f[author]=2668)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=2745](http://okina.univ-angers.fr/publications?f[author]=2745)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=2572](http://okina.univ-angers.fr/publications?f[author]=2572)
- [7] <http://okina.univ-angers.fr/bouchta.sahraoui/publications>
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=5277](http://okina.univ-angers.fr/publications?f[keyword]=5277)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=5005](http://okina.univ-angers.fr/publications?f[keyword]=5005)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=5278](http://okina.univ-angers.fr/publications?f[keyword]=5278)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=5140](http://okina.univ-angers.fr/publications?f[keyword]=5140)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=5044](http://okina.univ-angers.fr/publications?f[keyword]=5044)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=5279](http://okina.univ-angers.fr/publications?f[keyword]=5279)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=5280](http://okina.univ-angers.fr/publications?f[keyword]=5280)
- [15] [http://okina.univ-angers.fr/publications?f\[keyword\]=5281](http://okina.univ-angers.fr/publications?f[keyword]=5281)
- [16] [http://okina.univ-angers.fr/publications?f\[keyword\]=5282](http://okina.univ-angers.fr/publications?f[keyword]=5282)
- [17] [http://okina.univ-angers.fr/publications?f\[keyword\]=5006](http://okina.univ-angers.fr/publications?f[keyword]=5006)
- [18] [http://okina.univ-angers.fr/publications?f\[keyword\]=5019](http://okina.univ-angers.fr/publications?f[keyword]=5019)
- [19] [http://okina.univ-angers.fr/publications?f\[keyword\]=5283](http://okina.univ-angers.fr/publications?f[keyword]=5283)
- [20] [http://okina.univ-angers.fr/publications?f\[keyword\]=5284](http://okina.univ-angers.fr/publications?f[keyword]=5284)
- [21] [http://okina.univ-angers.fr/publications?f\[keyword\]=4776](http://okina.univ-angers.fr/publications?f[keyword]=4776)
- [22] [http://okina.univ-angers.fr/publications?f\[keyword\]=5285](http://okina.univ-angers.fr/publications?f[keyword]=5285)
- [23] [http://okina.univ-angers.fr/publications?f\[keyword\]=5286](http://okina.univ-angers.fr/publications?f[keyword]=5286)
- [24] [http://okina.univ-angers.fr/publications?f\[keyword\]=5287](http://okina.univ-angers.fr/publications?f[keyword]=5287)
- [25] [http://okina.univ-angers.fr/publications?f\[keyword\]=5288](http://okina.univ-angers.fr/publications?f[keyword]=5288)
- [26] [http://okina.univ-angers.fr/publications?f\[keyword\]=5289](http://okina.univ-angers.fr/publications?f[keyword]=5289)
- [27] [http://okina.univ-angers.fr/publications?f\[keyword\]=4997](http://okina.univ-angers.fr/publications?f[keyword]=4997)

- [28] [http://okina.univ-angers.fr/publications?f\[keyword\]=5290](http://okina.univ-angers.fr/publications?f[keyword]=5290)
- [29] [http://okina.univ-angers.fr/publications?f\[keyword\]=5291](http://okina.univ-angers.fr/publications?f[keyword]=5291)
- [30] [http://okina.univ-angers.fr/publications?f\[keyword\]=5292](http://okina.univ-angers.fr/publications?f[keyword]=5292)
- [31] [http://okina.univ-angers.fr/publications?f\[keyword\]=5200](http://okina.univ-angers.fr/publications?f[keyword]=5200)
- [32] [http://okina.univ-angers.fr/publications?f\[keyword\]=5015](http://okina.univ-angers.fr/publications?f[keyword]=5015)
- [33] [http://okina.univ-angers.fr/publications?f\[keyword\]=4944](http://okina.univ-angers.fr/publications?f[keyword]=4944)
- [34] [http://okina.univ-angers.fr/publications?f\[keyword\]=5293](http://okina.univ-angers.fr/publications?f[keyword]=5293)
- [35] [http://okina.univ-angers.fr/publications?f\[keyword\]=5008](http://okina.univ-angers.fr/publications?f[keyword]=5008)
- [36] [http://okina.univ-angers.fr/publications?f\[keyword\]=5294](http://okina.univ-angers.fr/publications?f[keyword]=5294)
- [37] [http://okina.univ-angers.fr/publications?f\[keyword\]=5295](http://okina.univ-angers.fr/publications?f[keyword]=5295)
- [38] [http://okina.univ-angers.fr/publications?f\[keyword\]=5296](http://okina.univ-angers.fr/publications?f[keyword]=5296)
- [39] [http://okina.univ-angers.fr/publications?f\[keyword\]=5297](http://okina.univ-angers.fr/publications?f[keyword]=5297)
- [40] [http://okina.univ-angers.fr/publications?f\[keyword\]=4851](http://okina.univ-angers.fr/publications?f[keyword]=4851)
- [41] [http://okina.univ-angers.fr/publications?f\[keyword\]=5298](http://okina.univ-angers.fr/publications?f[keyword]=5298)
- [42] [http://okina.univ-angers.fr/publications?f\[keyword\]=5299](http://okina.univ-angers.fr/publications?f[keyword]=5299)
- [43] [http://okina.univ-angers.fr/publications?f\[keyword\]=5300](http://okina.univ-angers.fr/publications?f[keyword]=5300)
- [44] [http://okina.univ-angers.fr/publications?f\[keyword\]=5301](http://okina.univ-angers.fr/publications?f[keyword]=5301)
- [45] [http://okina.univ-angers.fr/publications?f\[keyword\]=5302](http://okina.univ-angers.fr/publications?f[keyword]=5302)
- [46] [http://okina.univ-angers.fr/publications?f\[keyword\]=5303](http://okina.univ-angers.fr/publications?f[keyword]=5303)
- [47] [http://okina.univ-angers.fr/publications?f\[keyword\]=5041](http://okina.univ-angers.fr/publications?f[keyword]=5041)
- [48] [http://okina.univ-angers.fr/publications?f\[keyword\]=4940](http://okina.univ-angers.fr/publications?f[keyword]=4940)
- [49] <http://okina.univ-angers.fr/publications/ua2136>
- [50] <http://dx.doi.org/10.1109/ICTONMW.2009.5385540>

Publié sur *Okina* (<http://okina.univ-angers.fr>)