Poster presentations

2nd Workshop INEO

Atibaia

march 28-31

48. # Organic Light Emitting Diodes (OLEDs): terms, definitions and device characterization standards / OLEDs: terminologia e extração de parâmetros normalizados

E. C. Burini Junior (1), E. R. Santos (3), G. Santos (2), M. R. Cavallari (2), F. J. Fonseca (2), A. M. Andrade (1)

(1) Instituto de Eletrotécnica e Energia, Universidade de São Paulo, Av. Prof. Luciano Gualberto, 1289, 05508-970, Butantã, São Paulo, SP (2) Escola Politécnica, Departamento de Engenharia de Sistemas Eletrônicos, USP. Av. Prof. Luciano Gualberto, Travessa 3, n° 158, 05508-900, (3) EPUSP, Departamento de Engenharia Metalúrgica e Materiais, Butantã, São Paulo,SP.

e-mail: elvo@iee.usp.br

In the early 1970 the devices called Solid State Light Sources - SSLSs were producing monochromatic light only. The anticipation of applications to the future, that could be designed and allocated to the LED, it was restricted to areas of displays and signaling. Especially because the device efficiency conversion from electricity to light was very low, and at that time there was not any potential that could be attributed to them to replace bulbs in general lighting service [1]. In the year 2009 many events took place that marked showed the largest international market penetration of OLED technology [2] and in the middle of this same year conventional LED (not organic) catalog was achieved [3], it indicates the possibility of this new LED to provide level of luminous efficiency greater than T5 fluorescent tubes (100 lm / W), but this new fluorescent technology facilities has not penetrated brazilian market yet. In Molecular Electronics Group - GEM / EPUSP, the electro-optical characterization of organic electroluminescent devices (OLEDs) are carried out immediately after they have been assembled. Laboratory facilities are being set at USP for the characterization activities to electroluminescent devices, as part of multidisciplinary interaction of Organic Electronics, and it have indicated the need to establish its own procedure and terminology. This paper presents results that were obtained with focus directed to these issues, mainly with reference at international standards (International Electrotechnical Commission - IEC) to organic electroluminescent devices. Some historical facts are presented in this regard. Brief consideration was made on two central themes, a scenario of international activities for the sector is established and at specific level, the basic element for devices, the TCO, that is usually deposited on glass plate or plastic (PET), imported ITO and the different ways or modes in which the issue of "light" can be characterized are addressed. With a focus on terminology, a discussion is presented on terms taken from the literature and that are used to indicate the device into conduction condition, and presented the term that is standard in Brazil (*tensão de limiar*). As the central part of this work results and topics related to international standardization are considered. This comes from the consideration of a version of terminology available to OLED displays (IEC 62341-1-2) [4] and another two documents that consider methods for measuring optical and electro-optical devices parameters [5,6] close the discussion about standard characterization of electroluminescent devices. The establishment of local technical standards, aligned to the international sector for OLEDs is introduced. As the next steps, it is proposed activity that to seek for harmonization in the terminology of OLEDs displays [4], that must be followed by standard methods for parameters of measurement [5].

[1] E.W. Brander, et al, Lighting Res. Technol, **v.5**, n.3, p.145-155 (1973).
[2] IEC 62341-1-1 Organic light emitting diode (OLED) displays – Part 1-1 (2009).
[3] Catálogo OSRAM (2009).
[4] IEC 62341-1-2 (Ed. 1.0) Organic light emitting diode displays - Part 1-2, 57p., (2007).
[5] IEC 62341-6-1 (TC 110/129/CDV) Organic Light Emitting Diode Displays - Part 6-1: Measuring Methods of Optical and Optoelectrical Parameters. 26p., (2007).
[6] Commission Internationale de L'Éclairage - CIE 127 (2007).