

ABSTRACT

Influenced by extraordinary global growth of photovoltaic market and the need for alternative energy sources in the future, organic solar cells are the objects which cause the interest, both in academic and industrial circles.

With the development of technology in the solar energy sector, the academic and the scientific worlds have turned their interest to organic photovoltaics which support this effort. Thus, the investigation has focused on increasing the performance of these devices and therefore their lifespan. Despite this, the device's resistance to environmental conditions plays a big part. Long term to humid conditions has been shown to affect the life but also the efficiency of organic photovoltaics, due to degradation of layers in the devices.

In this study, the lifespan of the normal structure organic photovoltaic has been examined, both under conditions of humidity and temperature. Specifically, it has investigated the effect of humidity and high temperatures on the devices, in which it has been placed a protective layer (encapsulation), which consists of four different materials, so as to compare and check which of these provides the longer life under these live conditions.

Keywords: Photovoltaics, Normal Organic Photovoltaics, Accelerated Lifetime Conditions, Encapsulation, Humidity Lifetime Performance