

Abstract Submitted
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Electrical Stability Tests of Polymer Light Emitting Devices¹ JACOB COX, ZAC BARCIKOWSKI, MARIAN TZOLOV, Lock Haven University of Pennsylvania — The degradation of polymer light emitting devices (PLEDs) is a main concern influencing the commercial production of functioning devices. There are various sources of degradation related to the polymer film, the interfaces, and the cathodes. The fundamental understanding of these processes helps to develop strategies for fabrication of devices with longer lifetimes. We are reporting on devices in which delamination of the metal cathode is the dominating degradation mechanism. We have performed stability tests at constant current and constant voltage accompanied by current-voltage characteristics. The results indicate initial improvement of functionality followed by degradation. The change in the current-voltage characteristics indicates modifications of the electron and hole transport through the polymer layer in addition to the delamination. The delamination appears only if the current is above a certain threshold value. We have studied the kinetics of the delamination which gradually increased with time. Several types of semitransparent anodes were used to clarify the origin of the observed delamination, e.g. gold, platinum, and ZnO:Al. The devices were also exposed to thermal stress tests to verify if the evolution of volatile molecules is involved in the observed degradation.

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