

Study of carrier injection from Al and NaCl/Al cathodes into Alq₃

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ABSTRACT:

We investigated the cathodes Al and NaCl/Al by current - voltage and luminescence – current characteristics at room temperature to study their electron injection properties through the interface. A clear difference between these two cathodes can be seen in the measurements. The current density and luminescence intensity for NaCl/Al cathode are several orders higher than that of Al cathode for a given thickness of Alq₃ at a given bias voltage. This would be expected to be not so much due to the addition of the small negative carrier current from electron injection but rather due to its compensating effect on large space charge limited positive carrier current. The thickness of NaCl layer was optimized as ~ 1.0 nm for the best device performance. The mechanism of this improvement of device by NaCl/Al cathode is discussed.

Keywords: molecular electronics, interface injection, electrode