

# Tris(2-Acyl-1,3-indandionate)aluminum(III) Complexes as Emitting Layer in Electroluminescent Devices

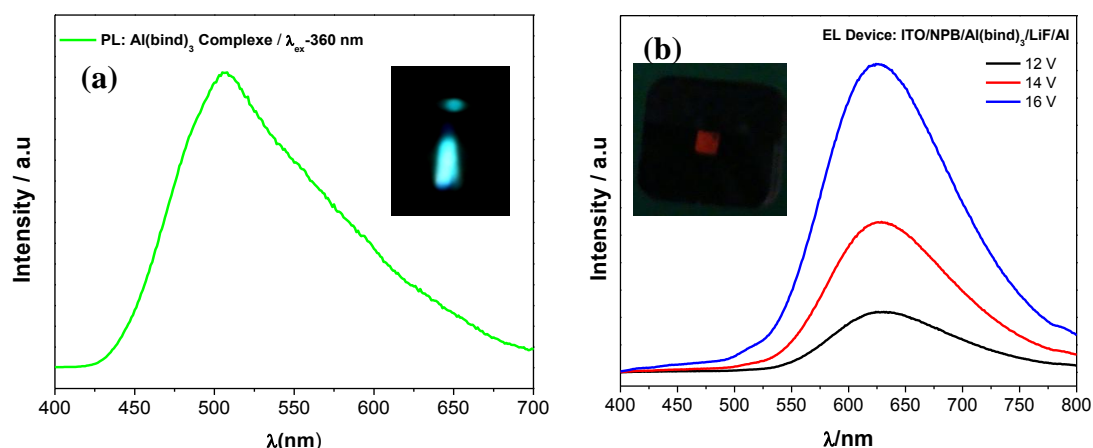
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This work reports about syntheses, characterization, Photo (PL) - and electroluminescence (EL) properties of the complexes presenting general formula  $[Al(aind)_3]$ , where aind: 2-acetyl-1,3-indandionate (acind), 2-propyl-1,3-indandionate (propind), 2-benzoyl-1,3-indandionate (bind) or 2-(4-methyl)benzoyl-1,3-indandionate (mbind). These complexes were characterized by elemental analyses, Fourier-infrared absorption spectroscopy, thermogravimetric analyses. The bilayer electroluminescent devices were prepared with the following configuration ITO/NPB/ $[Al(aind)_3]$ /LiF/Al, where NPB is N,N-bis-1-naphthyl-N,N-diphenyl-1,1-bifenil-4,4-diamina. The photoluminescent spectra of all complexes are characterized by overlapped broad bands arising from both fluorescence (around 640 nm) and phosphorescence (around 525 nm) phenomena (Fig. 1 (a)). On the other hand, their OLEDs exhibited only a high electroluminescence intense band in the red spectral region that may be assigned to the phosphorescence from acyl-1,3-indandionate ligands (Fig. 1 (b)). These data reflects the highest population of excited triplet state when the complexes are electrically excited. Furthermore, the OLEDs presented emission from low tension (~12V), reaching the highest intensity around 16 V. According with these results, the tris(2-Acyl-1,3-indandionate)aluminum(III) complexes act as both efficient electron transporters and emitting layers.



**Fig. 1.** Photo - and electroluminescence spectra recorded at room temperature (298 K), (a) PL spectra and picture of  $Al(bind)_3$  complex with excitation at 360 nm (b) EL spectra picture of ITO/NPB/ $[Al(bind)_3]$ /LiF/Al device.

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2. Teotonio, E.E.S.; Brito, H. F.; Viertler, H.; Faustino, W. M. Malta, O.L.; de Sá, G. F.; Felinto, M.C.F.C.; Santos, R.H.A.; Cremona, M.; *Polyhedro*. **2006**, 25, 3488.

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