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## Structure and Spectroscopic Properties of $M(Qn)_3$ complexes

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Metal quinolinates are known as key materials in the design of organic light emission diodes (OLEDs). The aluminium complex, tris-(8-hydroxyquinoline) aluminium(III), is the most well-known molecule of this family, although its gallium analogue has also been considered for use in OLEDs [1,2]. Factors that govern the efficacy these metal complexes for potential use in OLEDs include the type of isomer (mer versus fac), intermolecular interactions (like  $\pi$ - $\pi$  stacking) and solvent species “trapped” in the crystal lattice. Furthermore it was shown that the emission spectra of these complexes can be red or blue shifted by using derivatives of 8-hydroxyquinoline on the 5 and 7 positions of the ligand backbone with electron withdrawing or donating properties (as in 5,7-dichloro-8-hydroxyquinoline (5,7-Cl<sub>2</sub>Qn) or 5,7 dimethyl-8-hydroxyquinoline (5,7-Me<sub>2</sub>Qn)) [3-5].

In this work, various complexes of  $M(Qn)_3$  ( $M = Al(III)$ ,  $Ga(III)$ ,  $In(III)$  and  $Eu(III)$ ;  $Qn = 8$ -hydroxyquinoline / 5,7-dichloro-8-hydroxyquinoline / 5,7 dimethyl-8-hydroxyquinoline) have been synthesized and characterized with <sup>1</sup>H NMR, single crystal X-ray spectroscopy and other means and their photoluminescence properties evaluated [6, 7]. A systematic evaluation of the structural versus luminescence properties of nine  $M(Qn)_3$  complexes plus interesting results of two Europium(III) metal complexes are reported here.

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### Are you currently a postgraduate student? (Yes/No)

no

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