

MSc. AC 27

DEVELOPMENT OF A NEW FLUORESCENT REAGENT FOR
THE DETERMINATION OF METAL IONS AT VERY LOW
CONCENTRATIONS

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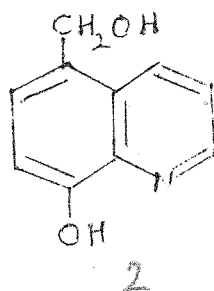
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ABSTRACT

5 - Hydroxymethyl - 8 - quinolinol **2** was synthesized from 8 - Hydroxyquinolene. Irradiation with UV showed that it undergoes excitation at 360 nm and emits fluorescence at 435 nm.



It possessed the ability to chelate with Al^{3+} as its parent compound 8 - Hydroxyquinolene. The chelated complex partially dissolved in methylene chloride with the maximum extraction occurring at pH 9. The aluminium complex absorbed UV radiation at 400 nm to reach the excited state and emitted fluorescence at 510 nm. It was found that **2** was about 50% better than 8 - Hydroxyquinolene for the determination of Al^{3+} at very low concentrations. Chelation with Al^{3+} reduces the energy gap between π and π^* energy levels. This explains the shift of absorption to larger wavelength. Presence of hydroxymethyl group in **2** enhances the quantum yield to a higher value compared to its parent compound on chelation.

Eventhough **2** is found to be very sensitive compared to 8 - Hydroxyquinolene, the prospect of using it in quantitative analysis of Al^{3+} is limited because of its lower solubility in methylene chloride.