



# Development of functionalized surfaces for metal ion sensing

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## Abstract

This research is focused on functionalization of paper and glass surfaces to use as metal ion sensors. Functionalisation of glass and paper surfaces was accomplished by spraying  $\text{SOCl}_2$  at  $400^\circ\text{C}$  and  $40^\circ\text{C}$  respectively. This was followed by spraying ligand on the surfaces to react the chlorinated surface with the ligand chemically to obtain a successful attachment of the ligand to the surface.

Two methods were employed to synthesize para-aminobenzohydroxamic acid ligand. In the first method, para-aminobenzoic acid was converted to the ester using ethanol and the ester was reacted with hydroxylamine hydrochloride to form the ligand. Second method involved the conversion of para-aminobenzoic acid to the acyl chloride using DMSO as the solvent and this was converted to the ligand using hydroxylamine hydrochloride.

The UV visible spectra of the treated glass plates were studied extensively and found a development of an absorption band due to the colour of the ligand around 450 nm. The colour development on the paper surfaces at different pH values of the sprayed ligand was studied.