



## Exploiting of the phenoxazine as first – ever use ligand in rapid spectrophotometric methods for the determination of chromium(VI) in environmental samples

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**Abstract** Two new rapid, accurate, sensitive, reproducible and economical spectrophotometric methods are described for the determination of hexavalent chromium in bulk and in environmental samples like, water and soil using two new electrophilic coupling spectrophotometric reagents, 2-amino-2',5-dichlorobenzophenone (MCB) and 2-amino-5-chloro-2'-fluorobenzophenone (MFB) and first-ever use phenoxazine (PNZ). Both methods are based on the oxidation of (MCB) or (MFB) by chromium(VI) in hydrochloric acid medium and coupling with PNZ to yield red colored, which are stable for about 12 h and have an absorbance maximum 520 nm. Beer's law is obeyed for chromium(VI) in the concentration ranges  $0.15-1.20 \mu\text{g mL}^{-1}$  and  $0.17-1.41 \mu\text{g mL}^{-1}$  respectively. The optimum reaction conditions and other important analytical parameters were established to maximize sensitivity of these methods. Interference by various non-target ions was also investigated. The performance of these methods was further evaluated by recovery tests applying standard addition method, which indicated that there is no significant difference between the proposed methods and the standard reference spectrophotometric method.

**Keywords:** spectrophotometry, hexavalent chromium, phenoxazines, environmental samples

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