



## A simple green enrichment approach for the determination of anionic analytes based on electrostatically driven assembly

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We present a new eco-friendly extraction for the determination of chromate ion and oxytetracycline (OTC) antibiotics in water samples. The approach deals with an alternative exploitation of layered double hydroxides in sample preparation by using their chemical compositions to initiate an electrostatic assembly of hydroxide particles (HPs) that simultaneously enables the extraction of anionic analytes. As an *in situ* one-step strategy, an instant formation of HPs and the extraction were accomplished concurrently within 3 min by rapidly introducing a mixed solution of magnesium and aluminum ions into an alkaline sample solution. The enriched analytes were next quantified by spectrophotometry. Under optimized conditions, the enrichment factor was 10 for chromate and 17 for OTC. The linearity ranged from 50 to 2000 ng mL<sup>-1</sup>, with a limit of detection of 22 ng mL<sup>-1</sup> for chromate and 18 ng mL<sup>-1</sup> for OTC. The applicability of this method was successfully demonstrated for the analysis of trace analytes in water samples. Compared with other sorbent-based extractions, the proposed method is simple, rapid, cost effective, and environmentally benign as the synthesis step of the sorbent and the requirement for organic solvents are avoided, thereby saving time, chemicals, and energy.

**Keywords:** Green extraction; Electrostatic assembly; Chromate ion; Oxytetracycline