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CHLORIDE AND CHLORO-COMPLEXES ASSESSMENT IN A SMART-SAMPLING APPROACH FOR METAL IONS DETERMINATION

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ABSTRACT

In the framework of a recently funded project for metal ions assessment employing on-site smart sampling approaches, Aqua_Smart, it was important to tackle the availability of some metallic ions in different water bodies. Considering the high chloride content in seawaters and its variability in estuarine waters, the potential formation of chloro-complexes is a critical issue. The ongoing project, Aqua_Smart, aims to develop new devices for a more effective sampling process. The idea relies upon the usage of solid phase extraction for analyte retention as a replacement for transporting high volumes of samples to the laboratory. With this approach, only a small cartridge needs to be transported, and, depending on the volume used to perform the analyte elution at the laboratory, a pre-concentration effect can be attained. For this purpose, solid resins are to be employed for the metal ion retention, making the charge of the ion highly relevant. It is known that some metal ions form chloro-complexes with chloride, resulting in negatively charged complexes. In this context, some studies were carried out to support the hypothesis that, considering the chloride content of high salinity waters like seawater, some metal ions namely cobalt, was indeed complexed. Additionally, it was decided to develop a flow system for chloride assessment in natural waters, namely estuarine and seawaters, anticipating if some of the metal ions are present as negatively charged complexes. The combination of these two flow analysis procedures complements each other, and the results showed the need to take into consideration sample matrices in the sampling procedures.

Keywords: Micro sequential injection analysis system; Dynamic water system; Cobalt.

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