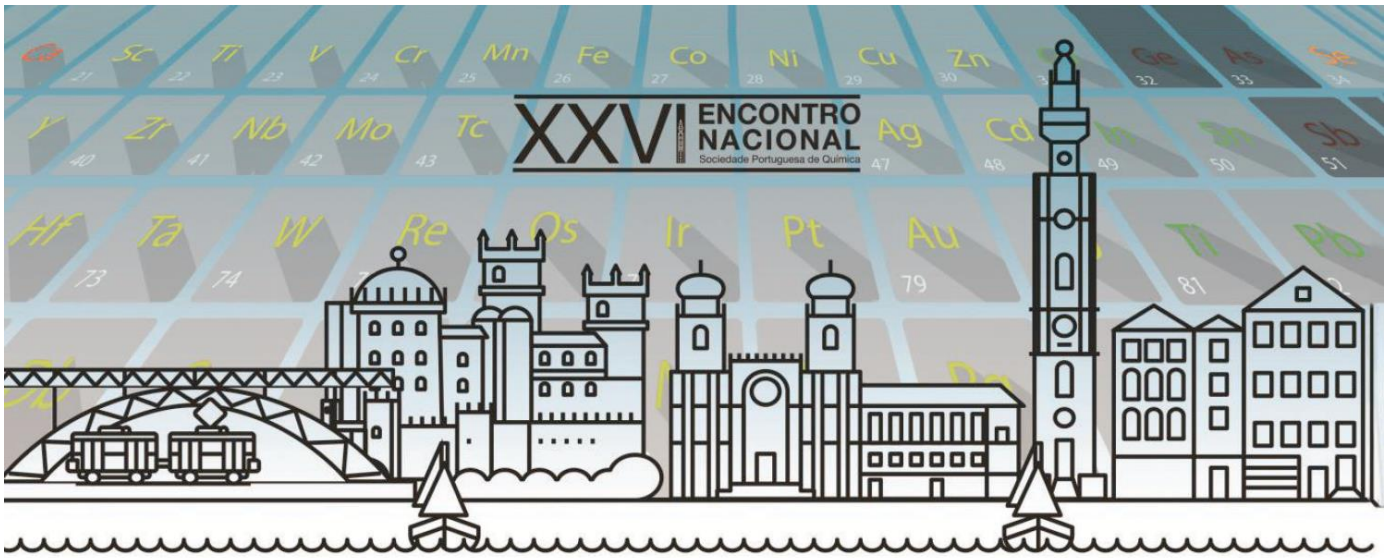

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Environment

Improvement of a sequential injection method for the determination of chromium (VI) in waters using a GlobalFIA platform

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Recreational waters, both coastal and inland, are stressed by anthropological activities, with consequent contamination by inorganic persistent pollutants. In this scenario, we propose to develop automatic flow based methods for real-time monitoring of persistent pollutants. These methods are expected to present advantages over existing ones in terms of cost, reagent consumption, portability and speciation of analytes.
Chromium is a heavy metal element and exists commonly in the oxidation states of Cr(VI) and Cr(III) in water samples. Chromium (VI) is one of the persistent inorganic pollutants with particular importance. This transition metal is added to marine paints and primers, acting as anticorrosive agent. [1]The reference methods for Cr(VI) determination use toxic reagents or display low sensitivity.[2] One of the active areas of green chemistry research is to devise analytical methods that reduce or eliminate the use and generation of hazardous substances.
In this work, we intended to explore a compact and miniaturized GlobalFIA platform to improve of a sequential injection method for the determination of Cr(VI), shown in **Figure 1**. This method was based on the detection of a blue unstable intermediate compound resulting from the reaction of Cr(VI) with hydrogen peroxide (H_2O_2) in acidic medium. [3] The idea is to explore the use of low toxicity reagents/products associated with the portability of the GlobalFIA equipment.

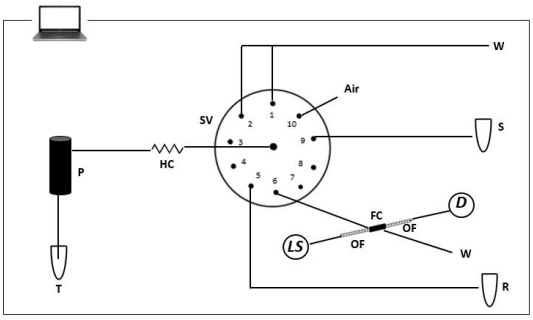

Figure 1: Sequential injection manifold for chromium(VI) determination: S, sample or standard; T, transporter (H_2O); R, hydrogen peroxide (H_2O_2) and sulfuric acid (H_2SO_4); P, milliGAT pump; SV, 10 port selection valve; HC, holding coil; OF, optical fibers; FC, flow cell; LS, Light source, tungsten lamp; D, Detector, spectrophotometer USB-4000; W, waste.

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