

Title: **Simultaneous speciation analysis of As and Sb redox couples by HPLC-ICP-MS**

Student: Mireia Bellí Catalina

Date: June 2020

Supervisor/s: Dr. José Fermin López Sánchez
Department of Chemical Engineering and Analytical Chemistry

Human activity causes a constant impact on the environment, sometimes resulting in irreversible damage. To avoid such harm, the development of approaches to monitor and assess its effect has become vital. Speciation analysis is one of the recently adopted tools to surveil the possible contamination with toxic substances of water, food, rivers, and many other environments. Furthermore, the combination of the speciation analysis of two different analytes into a single run, what is known as multielemental speciation, is an extraordinary chance to reduce costs, time and waste in such methodologies.

In this research, a literature review is conducted for the speciation analysis of As and Sb species by high-performance liquid chromatography coupled to plasma mass spectrometry. It assembles articles and reviews issues regarding sampling and preparation, working conditions of the chromatographic separation and the used ICP-MS system and possible interferences. Arsenic and antimony are natural recurring elements frequently found together in volcanic and mining areas, hence, developing a reliable method for their simultaneous speciation would result in a key tool to control the ecosystems in the interest of public health and global wellbeing.

Keywords: arsenic, antimony, multielemental speciation, HPLC, ICP-MS, redox couples, simultaneous speciation, environment