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### **ACCEPTED MANUSCRIPT**

# Coupling dispersive liquid-liquid microextraction to inductively coupled plasma atomic emission spectrometry: an oxymoron?

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#### Abstract

Coupling dispersive liquid-liquid micro-extraction (DLLME) to inductively coupled plasma atomic emission spectrometry (ICP-AES) is usually troublesome due to the limited plasma tolerance to the organic solvents usually employed for metal extraction. This work explores different coupling strategies allowing the multi-element determination by ICP-AES of the solutions obtained after DLLME procedures. To this end, three of the most common extractant solvents in DLLME procedures (1-undecanol, 1-butyl-3-methyl-imidazolium hexafluorophosphate and chloroform) have been selected to face most of the main problems reported in DLLME-ICP-AES coupling (i.e., those arising from the high solvent viscosity and volatility). Results demonstrate that DLLME can be successfully coupled to ICP-AES after a careful optimization of the experimental conditions. Thus, elemental analysis in 1-undecanol and 1-butyl-3-methyl-imidazolium hexafluorophosphate extracts can be achieved by ICP-AES after a simple dilution step with methanol (1:0.5). Chloroform can be directly introduced into the plasma with minimum changes in the ICP-AES configuration

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