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Determination of lead and cadmium using an ionic liquid and dispersive liquid-liquid microextraction followed by electrothermal atomic absorption spectrometry

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1 **Determination of lead and cadmium using an ionic liquid and**
2 **dispersive liquid-liquid microextraction followed by**
3 **electrothermal atomic absorption spectrometry**

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20 **ABSTRACT**

21 A procedure for the determination of ultratrace levels of lead and cadmium
22 using dispersive liquid-liquid microextraction followed by electrothermal atomic
23 absorption spectrometry (ETAAS) has been developed. The ionic liquid, 1-octyl-
24 3-methylimidazolium bis(trifluoromethylsulfonyl)imide ($[\text{C}_8\text{MIm}][\text{NTf}_2]$), is formed
25 *in situ* and used to extract the lead and cadmium complexes with ammonium
26 pyrrolidinedithiocarbamate. The very fine droplets of ($[\text{C}_8\text{MIm}][\text{NTf}_2]$) allow
27 effective dispersion without the need for organic solvents. After centrifugation,
28 the concentrations of lead and cadmium in the sedimented phase can be
29 determined by ETAAS. Using a 10 mL aqueous sample, the enrichment factor
30 of the procedure was 280 and detection limits of 0.2 and 3 ng L⁻¹ were obtained
31 for cadmium and lead, respectively. The relative standard deviations for 10
32 replicates at the 10 ng L⁻¹ cadmium and 0.2 µg L⁻¹ lead levels were 6.5 and

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