# Use of a Polymer Inclusion Membrane and a Chelating Resin for the Flow-Based Sequential Determination of Copper(II) and Zinc(II) in Natural Waters and Soil Leachates 

Tânia C. F. Ribas ${ }^{1}$, Charles F. Croft ${ }^{2}$, M. Inês G. S. Almeida ${ }^{2}$, Raquel B. R. Mesquita ${ }^{1}$, Spas D. Kolev ${ }^{2}$ and António O. S. S. Rangel ${ }^{1, *}$

1 Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina - Laboratório Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, 4169-005 Porto, Portugal
${ }_{2}$ School of Chemistry, University of Melbourne, VIC, 3010, Australia

* Correspondence: arangel@porto.ucp.pt


Figure S1. Spectra of the colour metal complexes with PAR (A) and PAN (B); spectra of the blank (reagent in milliQ water) (blue lines), $\mathrm{Cu}(\mathrm{II})-\mathrm{PAR} / \mathrm{PAN}$ complex (yellow lines) and $\mathrm{Zn}(\mathrm{II})$ $\mathrm{PAR} / \mathrm{PAN}$ complex (green lines); PAR/PAN concentration of $0.1 \mathrm{mmolL}^{-1}$; metal ion concentration of $0.5 \mu \mathrm{gL}^{-1}$; and carbonate buffer ( $0.6 \mathrm{mmolL}^{-1}$ ) solution at $\mathrm{pH}=10$.


Figure S2. Study of the effect of the PIM column (A) and the Chelex column (B) on the calibration curves of $\operatorname{zinc}(\mathrm{II})$ and copper(II): (A) direct zinc(II) calibration curve without (blue) and with (orange) using a PIM; and (B) calibration curve with mixed standards of copper(II) and zinc(II) aspirated through the Chelex column (green) and without going through the Chelex column (grey) and calibration curve with zinc(II) standards with (yellow) and without (blue) using a Chelex column.


Figure S3. Comparison of the results obtained with the newly developed SIA system and those obtained with a reference method (ICP-OES): (A) copper(II) determination; and (B) zinc(II) determination. The lines represent the linear relationship between the two methods.

