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## Use of a polymer inclusion membrane and a chelating resin for the flow-based multi-determination of metals in waters and soil leachates

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To overcome the challenges often encountered in the environmental monitoring, extraction procedures are often needed in order to selectively separate a target analyte from a complex matrix. Additionally, under certain conditions, the enrichment of the analyte often present in low concentration can also be accomplished.

Flow-based methods are appealing to implement in-line sample preparation due to the associated apparatus versatility. In this scenario, a bi-parametric sequential injection system with in-line extraction for the individual spectrophotometric determination of copper(II) and zinc(II) was developed. To conduct all determinations using a single manifold, a non-selective reagent, 4-(2-pyridylazo) resorcinol (PAR), was chosen as the colour reagent. In-line extraction procedures using two different polymeric materials was the chosen strategy to selectively separate and allow the individual determination of metal ions. A Chelex 100 resin and a polymer inclusion membrane (PIM) were applied for the retention of copper(II) and zinc(II), respectively. Chelex 100 resin is a styrene divinylbenzene copolymer, which acts as a chelating resin. It is usually used to bind metal ions, and the metal affinity depends on the solution pH. PIMs are thin, flexible and stable polymeric films that can selectively retain chemical species. PIMs containing di-(2-ethylhexyl)phosphoric acid (D2EHPA) as extractant, present high affinity for zinc(II) [1].

The developed system was applied for the determination of copper(II) and zinc(II) in natural waters and soil leachates.

### Literature

[1] L.D. Nghiem, P. Mornane, I.D. Potter, J.M. Perera, R.W. Cattrall, S.D. Kolev, *J. Membr. Sci.* 281 (2006) 7.

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