Self-indicating, Simultaneous Multianalyte recognition using an Ionic Liquid

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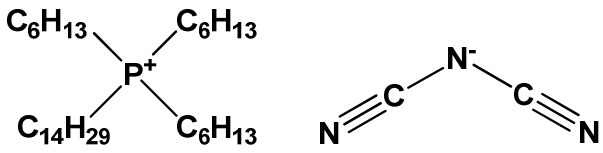

Figure 1: The Ionic Liquid (IL) used in this study; trihexyltetradecylphosphonium dicyanamide.

Ionic Liquids (ILs) are the subject of increased diverse research worldwide due to many attractive inherent characteristics such as high thermal stability, negligible vapour pressure and physical and chemical diversity due to the many permutations possible[1].

We have studied the IL $[P_{6,6,6,14}][DCA]$ as a *self-indicating, simultaneous, multianalyte recognition system* for heavy metal ions such as Cu^{2+} and Co^{2+}. When incorporated into a polymer membrane, this system maintains all these attractive features with the added bonus of the IL now being *self-plasticizing*. The optical response is obtained via co-ordination of the heavy metal to the anion $[DCA]^-$.[2]

A system like this can be viewed as a building block for future chemical sensing platforms; where the system *itself* is responsive toward an analyte, thereby eliminating the need for a reactive chromophore. The resulting system can also be viewed as an optode containing only two components (polymer and plasticizer) as opposed to a classical 5-component optode (polymer, plasticizer, ionophore, ion-exchanger, dye). This simplification of components shows potential for further studies in electrochemical-based sensors (ISE's).

Our aim will be to present the results obtained thus far from both optical and structural characterization studies.

1. Wilkes, J. S., ***Green Chemistry,*** **2002, 4, (2), 73-80.**

2. Vangdal, B.; Carranza, J.; Lloret, F.; Julve, M.; Sletten, J., ***Journal of the Chemical Society-Dalton Transactions*** **2002, (4), 566-574.**

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