

A Turn-on Fluorescent Sensor for Pb(II)

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Abstract : Lead(II) is one of the most toxic environmental pollutants in the world, due to its high toxicity and non-biodegradability. Lead exposure causes severe risks to human health such as central brain damages, convulsions, kidney damages, and even death. To determine lead(II) in environmental or biological samples, scientists use atomic absorption spectrometry (AAS), inductively coupled plasma mass spectrometry (ICPMS), fluorescence spectrometry and electrochemical techniques. Among these systems the fluorescence spectrometry and fluorescent chemical sensors have attracted considerable attention because of their good selectivity and high sensitivity. The fluorescent polymers usually contain covalently bonded fluorophores. In this study imidazole based UV cured polymeric film was prepared and designed to act as a fluorescence chemo sensor for lead (II) analysis. The optimum conditions such as influence of pH value and time on the fluorescence intensity of the sensor have also been investigated. The sensor was highly sensitive with a detection limit as low as 1.87×10^{-8} mol L⁻¹ and it was successful in the determination of Pb(II) in water samples.

Keywords : fluorescence, lead(II), photopolymerization, polymeric sensor

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