

A Fluorescent Polymeric Boron Sensor

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Abstract : Boron is an essential trace element for the completion of the life circle for organisms. Suitable methods for the determination of boron have been proposed, including acid - base titrimetric, inductively coupled plasma emission spectroscopy flame atomic absorption and spectrophotometric. However, the above methods have some disadvantages such as long analysis times, requirement of corrosive media such as concentrated sulphuric acid and multi-step sample preparation requirements and time-consuming procedures. In this study, a selective and reusable fluorescent sensor for boron based on glycosyloxyethyl methacrylate was prepared by photopolymerization. The response characteristics such as response time, pH, linear range, limit of detection were systematically investigated. The excitation/emission maxima of the membrane were at 378/423 nm, respectively. The approximate response time was measured as 50 sec. In addition, sensor had a very low limit of detection which was 0.3 ppb. The sensor was successfully used for the determination of boron in water samples with satisfactory results.

Keywords : boron, fluorescence, photopolymerization, polymeric sensor

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