



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**Abstract:** Novel plasticized polymeric membrane (PPME) and coated platinum wire (CPWE) electrodes based on 1,4,7-trithiacyclononane and oleic acid, as a good lipophilic additive for highly selective determination of Ce<sup>3+</sup> ions, have been developed. The electrodes exhibit a Nernstian slope of 19.4 mV/decade (for both electrodes) over a wide Ce<sup>3+</sup> ion concentration range, from 5.0  $\times 10^{-6}$ -5.0  $\times 10^{-2}$  M and 1.0  $\times 10^{-7}$ -1.0  $\times 10^{-2}$  M for PPME and CPWE, respectively. The limits of detection were 3.5  $\times 10^{-6}$  and 8.0  $\times 10^{-8}$  M for PPME and CPWE, respectively. The electrodes possess a fast response time of 15 s, can be used for at least 3 months without observing any deviation, and can be used in a pH range of 5.0-8.0. The proposed electrodes could reveal excellent selectivity for Ce<sup>3+</sup> over a wide variety of alkali, alkaline earth, some transitions, and heavy metal ions. The practical utility of the electrodes has been demonstrated by their use as indicator electrodes in the potentiometric titration of Ce<sup>3+</sup> ions with EDTA and vice versa, and in the determination of fluoride ions in some mouthwash preparations.

**Key Words:** Cerium(III)-selective electrode, coated platinum wire electrode, plasticized polymeric membrane electrode

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