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## PVC-Membrane Electrodes Based on 18-Crown-6 and Dibenzo-18-Crown-6 Ethers for Determination of Silver

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**Abstract:** PVC-membrane electrodes for Ag<sup>+</sup> based on either 18-crown-6 (I) or di-benzo-18-crown-6 ether (II) were applied for the first time. The effect of solvent mediator on the electrode performance was discussed. Nernstian slope values were 59 and 58.9 mV/decade for both I and II electrode types, respectively. The linear concentration range was 10<sup>-5</sup>-10<sup>-1</sup>M. The detection limit was 7.9  $\times$  10<sup>-6</sup> M. The working pH ranges were 5-9 or 4-9, depending on the concentration of Ag<sup>+</sup> ion. The electrodes showed good selectivity towards most of the common alkali, alkaline earths, and transition metal cations. The electrodes were applied successfully for the determination of silver in photographic wastewater and alloys that are part of railway engines. The recovery range was 96%-100%, and the relative standard deviation was (0.95-2.7) for n = 4. The obtained results were compared to those of an atomic absorption spectrophotometric method.

**Key Words:** Ag<sup>+</sup> determination, silver electrode, PVC-membrane electrode

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