

Analytical behavior of thin double layer mercury film electrode

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Abstract. The thin silver mercury film electrode on nickel substrate (NiAgMFE) for ASV measurements is developed. The electrode is prepared by electrodeposition of silver on nickel substrate and contact amalgamating with pure mercury. NiAgMFE has some important advantages: high hydrogen over potential which ensures an wide working potential range; no formation of intermetallic compounds; small and stable residual current; high resolution of ASV peaks of copper, lead and cadmium. The sensitivity of the sensor, the residual current of the polarization curves and stability of the mercury film depend on the thickness of the silver film. The electrode with 5.0 μm thickness of silver film provides the highest stability. A sample containing 1mg/l Cu(II), Pb(II), and Cd(II) has been analyzed with relative standard deviation 5.6, 2.6 and 4.2%, respectively, and detection limits 49, 36 and 56 $\mu\text{g dm}^{-3}$, respectively.

Keywords: a.c. voltammetry; thin layer; mercury electrode;
