

DEVELOPMENT OF LOW COST CYCLIC VOLTAMMETER

by

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ABSTRACT

Cyclic voltammetry is perhaps the most versatile electroanalytical technique for the study of electroactive species. Its versatility combined with ease of measurement has resulted in extensive use of cyclic voltammetry in all major fields of chemistry.

In spite of the wide usage enjoyed by the cyclic voltammetry, the cyclic voltammograph which is used to obtain electrochemical information is quite an expensive tool and it prevents most Sri Lankan laboratories to enjoy its privilege. This problem can be overcome by constructing a low cost cyclic voltammograph.

The cost reduction is achieved by designing the potentiostat to have only analog devices and employing general purpose components. The voltage drop (iR) in the electrochemical cell is eliminated by employing a positive feed back loop and stabilising the system. The desired signal is provided by VSG 72.

A three electrode polarographic cell is used in this purpose where all electrodes are constructed in the laboratory. An AMICO's XY recorder is used to record all cyclic voltammograms.

The instrument is tested for its performance with standard published results for reversible and quasi-reversible systems. The results are compared statistically at 95% confidence limit which proved that both instruments are compatible.