

**DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRIC  
(DPASV) TECHNIQUE FOR REACTIVE BLACK 5 ANALYSIS AT  
GLASSY CARBON ELECTRODE**

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## ABSTRACT

### **VOLTAMMETRIC DETERMINATION OF REACTIVE BLACK 5 (RB5) AT A GLASSY CARBON ELECTRODE (GCE) BY DIFFERENTIAL PULSE ANODIC STRIPPING VOLTAMMETRIC TECHNIQUE.**

Dyes are generally defined as an aromatic organic compound which shows an affinity towards the substrate to which they are being applied. Dyes are used to give colour to fabrics. Hence, the amounts and contents of dyes that used in fabrics industry must be analyzed. The presence of dyes in wastewater samples at any level is not safe for human. Therefore, dyes analysis needs a sensitive, precise, rapid, accurate, simple and low cost analytical method for dyes determination. The differential pulse anodic stripping voltammetry (DPASV) technique using glassy carbon electrode (GCE) as a working electrode and phosphate buffer at pH 4.2 as a supporting electrolyte has been proposed to be developed. The experimental voltammetric parameters were optimized in order to obtain a maximum response with analytical validation of the technique. The optimum parameters were initial potential ( $E_i$ ) = +0.3 V, end potential ( $E_f$ ) = +1.0 V, scan rate ( $\nu$ ) = 0.04 V/s, accumulation time ( $t_{acc}$ ) = 50 s, accumulation potential ( $E_{acc}$ ) = 0.4 V and pulse amplitude = 0.075 V. The anodic peak was appeared at 0.77972 V. The curve was linear from 0.5 to 1.25 mg/L ( $R^2=0.9986$ ) with detection limit of 0.025 mg/L. The precisions in terms of relative standard deviation (RSD) were 0.08%, 0.62% and 0.50% for consecutive three days. The range recovery achieved for 0.5, 0.7 and 1.0 mg/L of RB5 standard solution in simulation dye sample was 104.40%, 89.71%, and 111.15% respectively. It can be concluded that the developed technique is precise, accurate, rugged, low cost, fast and has potential to be an alternative method for routine analysis of RB5 in stimulation dye sample.

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