

CLOUD POINT EXTRACTION OF RHODAMINE 6G BY USING TRITON X-100 AS NONIONIC SURFACTANT

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Dyes can cause problems in several ways: they can have acute and chronic effects on exposed organism depending on the exposure time and dye concentration; they absorb and reflect sunlight entering water so can interfere with the growth of bacteria and hinder photosynthesis in aquatic plants [1]. Rhodamine 6G (R6G) is a cationic dye and used widely in acrylic, nylon, silk, and wool dyeing. Due to the complex chemical structure of cationic dyes, they are resistant to breakdown by chemical, physical, and biological treatments [2]. Dyes can be removed by many different methods from waters and wastewaters. The cloud point extraction (CPE) method using micelles is very promising methodology for removal of dyes from industrial wastewaters.

We have adopted CPE technique to remove R6G from wastewaters by using Triton X-100 as a nonionic surfactant. For that purpose, an aliquot of the R6G solution, 2 mL of 0.02 M HCl, 1.5 mL of 0.5 M NaCl, and 3 mL of 0.25 M Triton X-100 were added to 50 mL of polyethylene centrifuge tubes and diluted to the mark with distilled water. The resultant solution was equilibrated at 78°C in a thermostat bath for 30 min. Separation of two phases was accelerated by centrifugation for 10 min at 3500 rpm. After phase separation the concentration of R6G in the dilute phase was measured by using a double beam UV-Vis spectrophotometer. The effects of HCl concentration (Figure 1), temperature, Triton X-100 concentration, equilibrium time, electrolyte concentration, initial dye concentration, etc. on the CPE method were evaluated.

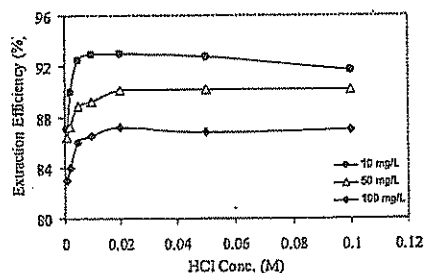


Figure 1. Effect of HCl concentration on CPE of R6G

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