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Mixed Micellar Cloud Point Extraction and Spectrophotometric Determination of Basic Fuchsin Dye

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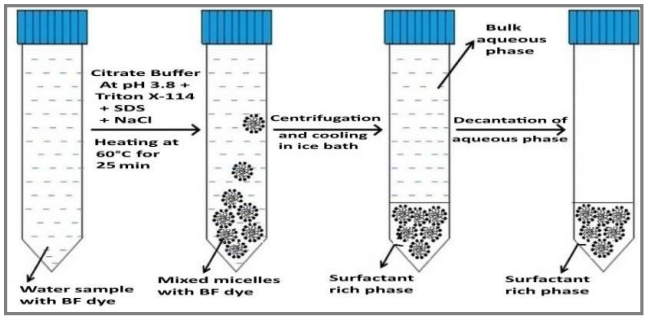
ABSTRACT

A rapid cloud point extraction(CPE) process using a mixed micelle of anionic surfactant sodium dodecyl sulfate (SDS) and non-ionic surfactant Triton X-114 (TX-114) for the pre-concentration and extraction of basic fuchsin (BF) dye in water samples was determined with spectrophotometry at a pH of 3.8. The optimal conditions like pH, surfactant concentrations (both SDS and TX-114), salt concentration, equilibrium temperature and equilibrium time were optimized for the best recoveries of the dye. Under the optimized conditions the analytical characteristics such as limits of detection, liner range and pre-concentration factor are 0.04763µg mL^{-1}, 0.0-4.05 µg $mL^{-1}$and 16.6 respectively. The present proposed method was successfully applied for the extraction of BF dye in tap and sea water samples. The recoveries were found to be in the range of 81.18 - 91.08 %.

Graphical Abstract



Keywords: Cloud point extraction (CPE), Spectrophotometry, TX-114, SDS