A NEW pH INDICATOR BASED ON ISATINE DERIVATIVE

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Many chemical analyses are performed by titration, a procedure in which a reagent in a solution of known concentration, called the standard solution, is allowed to react with a sample containing an unknown quantity of substance to be analyzed. The point at which equivalent quantities of the reactants are present, equivalence point, is usually detected through the addition of an indicator to the solution being titrated [1,2].

5-Chloro-3-[4-(trifluoromethoxy) phenylimino]indolin-2-one (CTFMEPI) was studied among isatine derivatives as a novel potential pH indicator. In terms of absorption intensity coming from the acid-base reactions, CTFMEPI showed a colour turning to purple from yellow with high extinction coefficient in the pH range 8.80-10.50. In addition, the corresponding colour development at the transition point can be attributed to the resonance structures of CTFMEPI, which were caused by the hydrogen ion dissociation from the acidic form of the compound in the presence of alkali. The full geometric optimization and achievement of the electronic structure of the molecule were performed by an AM1 Lower Case Semiempirical Method. The triazole compound was compared with phenolphthalein (PT), which is widely used as an acid-base indicator in titrimetry, for accuracy test.

References