

Problem 32: Colloid titration: titration of a cationic surfactant with polyanion

Chemicals

- benzyldimethyltetradecylammonium chloride (Zephiramine, Zeph; preferably with a concentration ranging from 5×10^{-5} to 8×10^{-5} mol L⁻¹)

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- benzyldimethyltetradecylammonium chloride (Zephiramine, Zeph; concentration should be around 1×10^{-4} mol L⁻¹)

- 0.0025 mol L⁻¹ potassium poly(vinylsulfate) (PVSK; titrant)**

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- 2.5×10^{-4} mol L⁻¹ potassium poly(vinylsulfate) (PVSK; titrant)**

Glassware

- volumetric pipette (10 mL)

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- volumetric pipette (30 mL)

Procedures

- (1) Take precisely an aliquot (10 mL) of the Zeph sample solution at about 1.0×10^{-4} mol L⁻¹ and add it to a 200 mL conical beaker using a volumetric pipette; then add 1 mL of 0.25 mol L⁻¹ acetic acid and 1 mL of the BCPB solution. Check the pH of the solution using pH test paper.

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- (1) Take precisely an aliquot (30 mL) of the Zeph sample solution and add it to a 200 mL conical beaker using a volumetric pipette; then add 1 mL of 0.25 mol L⁻¹ acetic acid and 1 mL of the BCPB solution. Check the pH of the solution using pH test paper.

Problem 36: Hydrolysis of ethyl acetate over a solid acid catalyst

Apparatuses and glassware

- volumetric pipettes (1 mL and 3 mL)

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- volumetric pipettes (3 mL and 5 mL)

Procedure

- (5) Fill a 25-mL burette with the 0.3 mol L⁻¹ NaOH solution.

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- (5) Fill a 25-mL burette with the 0.02 mol L⁻¹ NaOH solution.

R&S Phrases

sodium hydroxide

0.3 mol L⁻¹ aq. solution

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0.02 mol L⁻¹ aq. solution

Problem 37: Synthesis of a zinc ferrite

Procedure

(5) Start air bubbling through the glass tube (see Fig. 1).

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(5) Start air bubbling through the glass tube (see Fig. 37.1).

Problem 39: Synthesis of 1,4-dihydro-2,6-dimethylpyridine-3,5-dicarboxylic acid diethyl ester (Hantzsch ester)

Chemicals

• toluene

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• hexane