

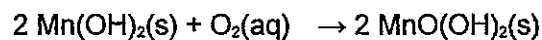
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科目：分析化學(A)
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國立臺灣大學 106 學年度碩士班招生考試試題

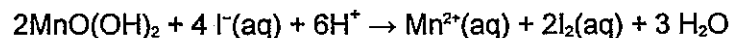
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1. Dissolved oxygen is usually determined by the Winkler method:

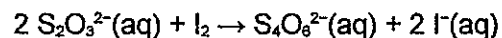
Step 1: oxygen is fixed by Mn(OH)_2 precipitate



Step 2: Iodine is formed when the precipitate is dissolved in acid



Step 3: Thiosulfate is used, with a starch indicator, to titrate the iodine



A 250 mL sample contains $x \mu\text{mol L}^{-1} \text{O}_2$. It requires 5 mL of 0.01 mol L^{-1} thiosulfate to complete the titration, what is the original concentration of O_2 ? (20%)

2. Describe (1) the principle of chromatography (2) HETP (3) HPLC (30%)
3. Calculate the pH of a solution that is 0.07 F in NH_3 and 0.28 F in NH_4Cl . The basic dissociation constant for NH_3 is 1.76×10^{-5} . (20%) (give approx. pH value)
4. Explain (1) atomic absorption spectrometry (2) inductively coupled plasma atomic emission spectrometry (3) ICP-MASS (30%)

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