

Preparation of salt

1 Soluble salt

ACID - BASE \rightarrow EXCESS INSOL. BASE + ACID

Required: prepare $\text{ZnSO}_4(\text{cs})$

Excess when:

- 1) no colourless gas bubbles
- 2) no longer dissolves

Why is excess insol. base required?

- If $\text{ZnCO}_3(\text{s})$ is limited, the solⁿ contains $\text{H}_2\text{SO}_4(\text{aq})$.
- It's hard to separate H_2SO_4 from mixture, even by fractional distillation. (ionized $\text{Na}^+ \text{H}^+ \text{SO}_4^{2-} \text{SO}_4^{2-}$ cannot obtain salt (杂质))
- Resulting crystal will contain impurities (H_2SO_4).

Crystallisation

1. heat until saturated
2. cool solⁿ (time is allowed for crystal to form)
3. filter the solⁿ and obtain crystal as residue
4. wash w/ small amt. of ice-cold distilled water
5. dry crystal in filter paper

ACID - BASE \rightarrow TITRATION OF SOL. BASE + ACID

Required: prepare $\text{NaCl}(\text{cs})$

为什么不能用上面的方法?

- Na^+ 不管配什么 -ve ion, compound 也溶于水
- 没有 insol. base

Titration

- 1a. Titrate known vol. & known molarity $\text{NaOH}(\text{aq})$ against std. $\text{HCl}(\text{aq})$
- 1b. Use methyl orange as indicator
- 1c. Record vol. of $\text{HCl}(\text{aq})$ used when end pt. is reached (yellow \rightarrow orange)
2. Repeat exp. w/o indicator w/ same vol. of acid

1st titration (all reactions: limited)

Crystallisation

1. heat until saturated
2. cool solⁿ (time is allowed for crystal to form)
3. filter the solⁿ and obtain crystal as residue
4. wash w/ small amt. of ice-cold distilled water
5. dry crystal in filter paper

2 Insoluble salt

PRECIPITATION

Required: prepare $\text{PbSO}_4(\text{cs})$

Mix equal volume & equal molarity of $\text{Pb}(\text{NO}_3)_2(\text{aq})$, $\text{Na}_2\text{SO}_4(\text{aq})$

depends on salt to prepare

- eg. $\text{PbCl}_2(\text{cs})$
- $\text{Pb}(\text{NO}_3)_2 + 2\text{NaCl} \rightarrow \text{PbCl}_2 + 2\text{NaNO}_3$
- $\text{Pb}(\text{NO}_3)_2$ mol : NaCl mol = 1 : 2

Filtration

1. Filter mixture & collect $\text{PbSO}_4(\text{cs})$ as residue
2. Wash w/ large amt. of distilled water
3. Dry w/ filter paper