

# OCR (A) Chemistry A-level

## Topic 3.1.4 - Qualitative Analysis

### Flashcards

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What are anions also known as?



What are anions also known as?

Negative ions



How can you test for  
carbonate ions,  $\text{CO}_3^{2-}$ ?



How can you test for carbonate ions,  $\text{CO}_3^{2-}$ ?

Add strong acid to the sample

Collect the gas produced

Pass through lime water



What are the observations for  
a positive test of carbonate  
ions,  $\text{CO}_3^{2-}$ ?



What are the observations for a positive test of carbonate ions,  
 $\text{CO}_3^{2-}$ ?

Fizzing

Limewater turns cloudy

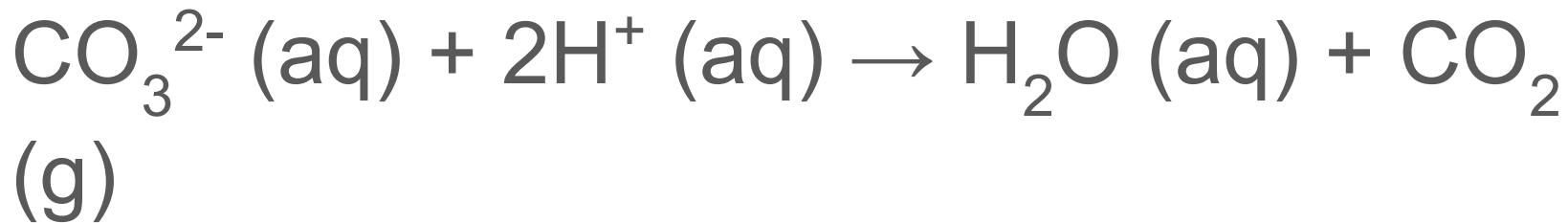


Write an equation for the  
carbonate ion test





Write an equation for the carbonate ion test



How can you test for sulfate  
ions,  $\text{SO}_4^{2-}$ ?



How can you test for sulphate ions,  $\text{SO}_4^{2-}$ ?

- Add dilute hydrochloric acid and barium chloride to the sample



What are the observations for  
a positive test of sulfate ions,  
 $\text{SO}_4^{2-}$ ?



What are the observations for a positive test of sulfate ions,  $\text{SO}_4^{2-}$ ?

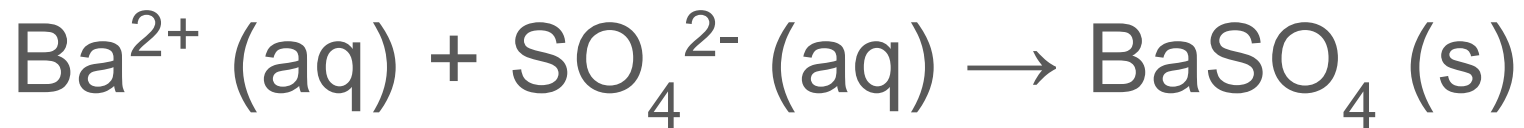
White precipitate of barium sulfate is produced



Write an equation for the  
sulfate ion test



Write an equation for the sulfate ion test



What do you use to test for halide ions?





What do you use to test for halide ions?

Acidified  $\text{AgNO}_3$



Why do you add  $\text{HNO}_3$  to test for halide ions and why not  $\text{HCl}$ ?



Why do you add  $\text{HNO}_3$  to test for halides and why not  $\text{HCl}$ ?

To remove  $\text{CO}_3^{2-}$

Adding  $\text{HCl}$  would add  $\text{Cl}^-$  ions, giving a false positive result



# How can you test for a halide ion?



# How can you test for a halide ion?

- Dissolve the sample in water
- Add aqueous silver nitrate
- Record the colour change
- If difficult to distinguish the colour, add aqueous ammonia, first dilute ammonia then concentrated ammonia
- Note the solubility of precipitate



Write the result and equation  
for  $\text{Cl}^-$  test



Write the result and equation for Cl<sup>-</sup> test

White precipitate, soluble in dilute aqueous ammonia



Write the result and equation  
for  $\text{Br}^-$  test





Write the result and equation for Br<sup>-</sup> test

Cream ppt, soluble in concentrated aqueous ammonia only



Write the result and equation  
for  $I^-$  test



Write the result and equation for  $I^-$  test

Yellow precipitate, insoluble in concentrated and dilute aqueous ammonia



When testing for carbonate, sulfate and halide ions, in which order should the tests be carried out and why?



When testing for carbonate, sulfate and halide ions, in which order should the tests be carried out and why?

1. Carbonate test
2. Sulfate test
3. Halide test

Because barium ions forms insoluble precipitate of  $\text{BaCO}_3$  and silver ions form insoluble precipitate of  $\text{Ag}_2\text{SO}_4$



# What are cations also known as?



What are cations also known as?

Positive ions



How can you test for  
ammonium ions,  $\text{NH}_4^+$ ?





How can you test for ammonium ions,  $\text{NH}_4^+$ ?

Add sodium hydroxide to the sample and warm it

Test the gas produced with red litmus paper



What are the observations for positive ammonium ions test?



What are the observations for positive ammonium ions test?

- Red litmus paper turns blue
- Ammonia has a pungent smell



Write the equation for  
ammonium ions test



Write the equation for ammonium ions test

