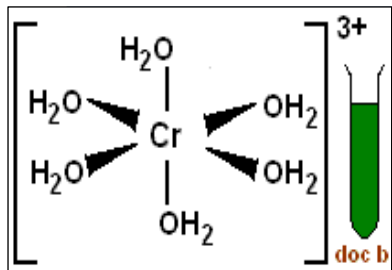


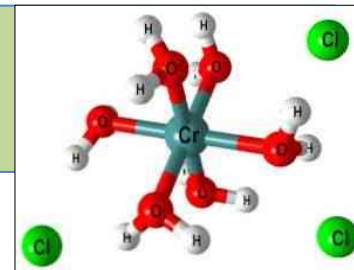
مراجعة كيمياء الكروم
مختبر الكيمياء اللاعضوية
مرحلة ثالثة
(التعليم الالكتروني)



صباحي ومسائي / أ.م. ايناس زهير الهاشمي
م.م. يسرى جليل و م. بيادر فاضل عباس



Chemistry of Chromium



(1) Detecting chromium triple ion (Cr^{3+})

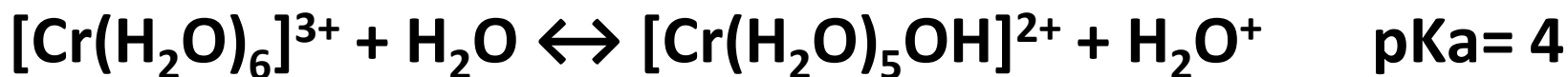
Chromium triple solution can be prepared by dissolving $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$ in water to form green solution resulted from the complex ion $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$



Dark green solid

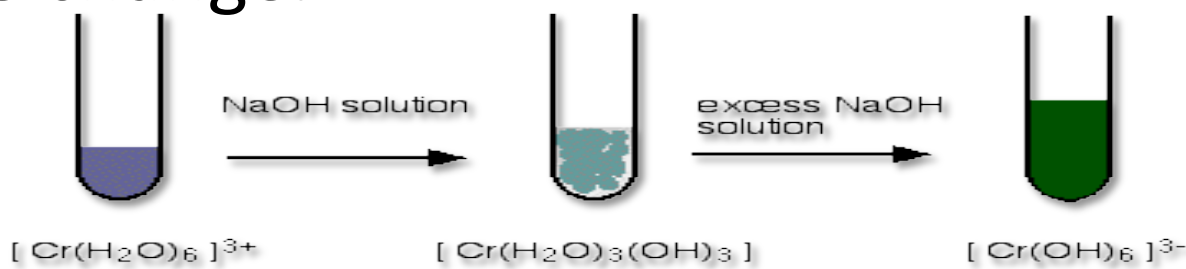
Green clear solution

This aqueous ion has an acidic characteristic in water:

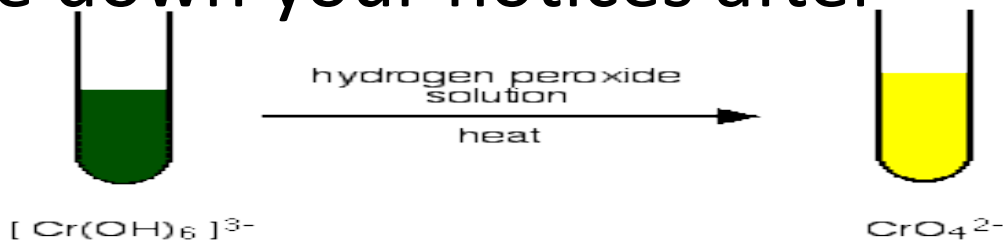


This ion can be abbreviated into (Cr^{3+}) to carry out the following detections:

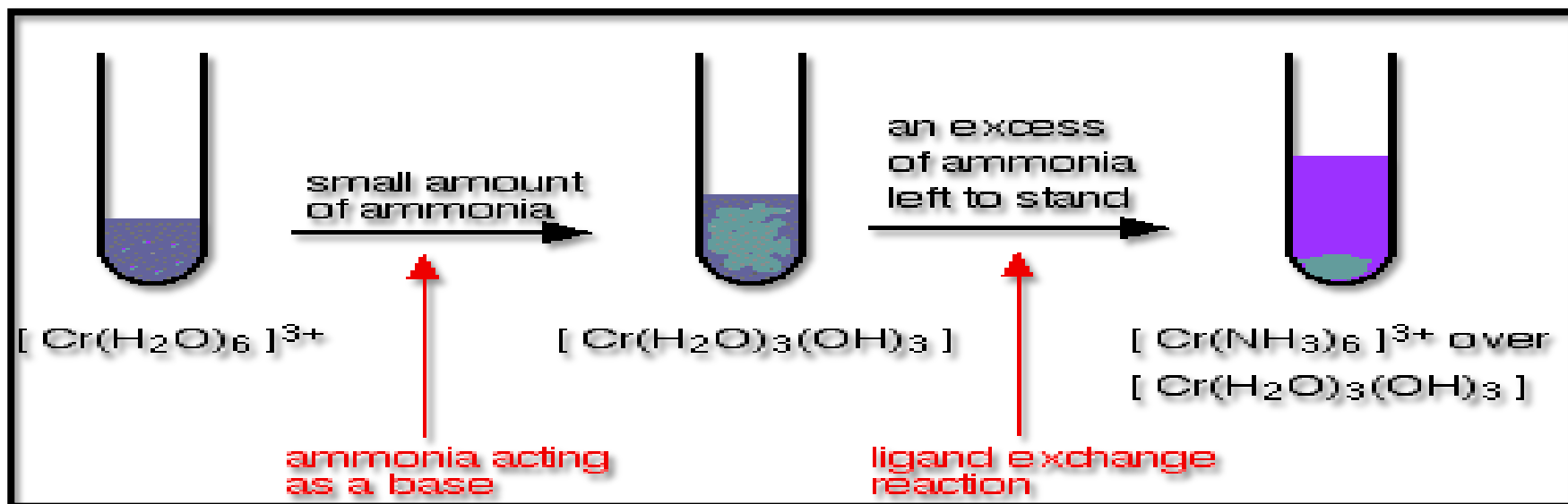
1) Put (10) drops of $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ solution in a test tube, add (2) drops of NaOH , and observe the change, then add more of the detector and observe the change.



then add (2) drops of H_2O_2 , observe the change, and heat the solution for 5 minutes. and observe the change and write down your notices after each addition.



2) Put (10) drops of $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ in a second test tube, add (2) drops of NH_4OH , then add more of the ammonia conc. and observe the change. Write down your notices in both cases.

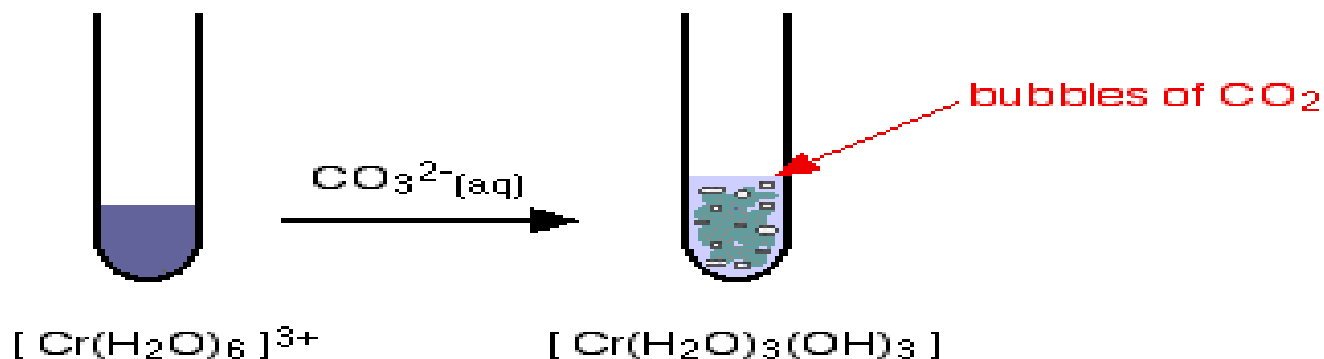


ملاحظة : هذا الكشف يكون للعنصر الذي له



ايونيين M^{2+} , M^{3+}

3) Put (10) drops of $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ in a third test tube, add (2) drops of Na_2CO_3 or K_2CO_3 , observe the change and write down your notices.

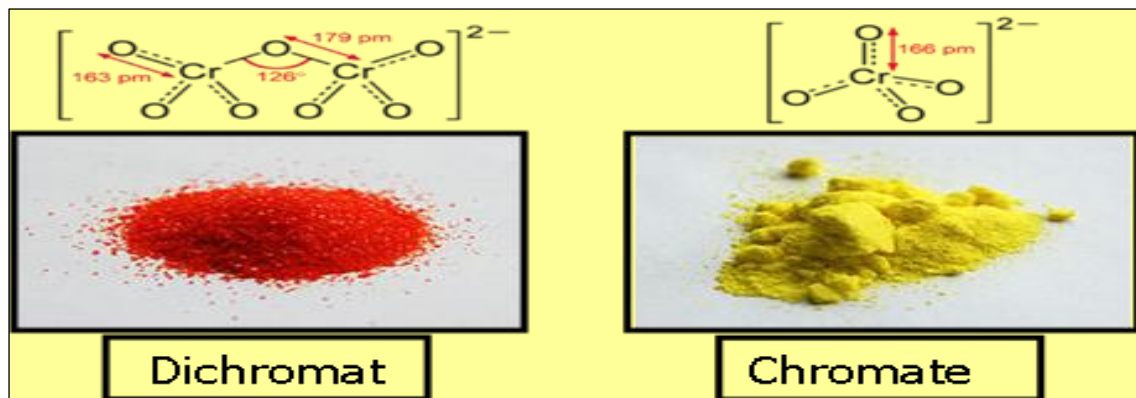


Question:

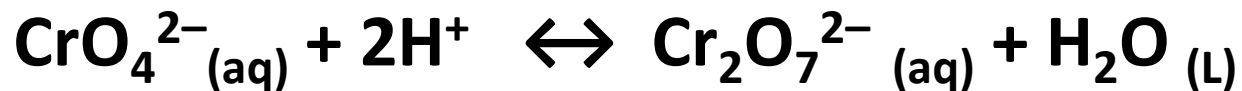
- 1) What is the distinguishable detection of Cr(III) Ion?
- 2) Write all question ?

عزيزي الطالب هذه الاسئلة مع المعادلات للكشوف هي اهم شيء لامتحان

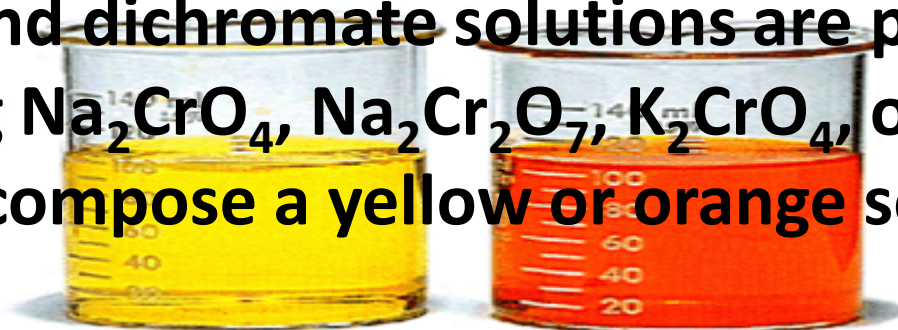
(2) Detecting anions

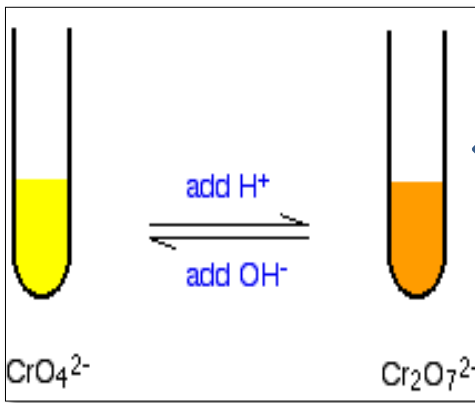


A balance happens for the both anions Chromate (yellow) and Dichromate (orange) when a quantity of K_2CrO_4 and $K_2Cr_2O_7$ is dissolved in water, according to the following equation:



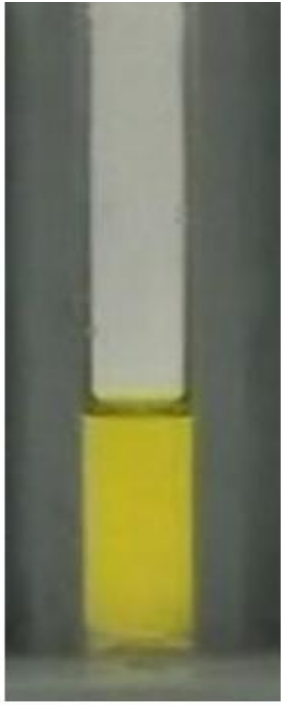
Chromate and dichromate solutions are prepared by dissolving Na_2CrO_4 , $Na_2Cr_2O_7$, K_2CrO_4 , or $K_2Cr_2O_7$ in water to compose a yellow or orange solution.



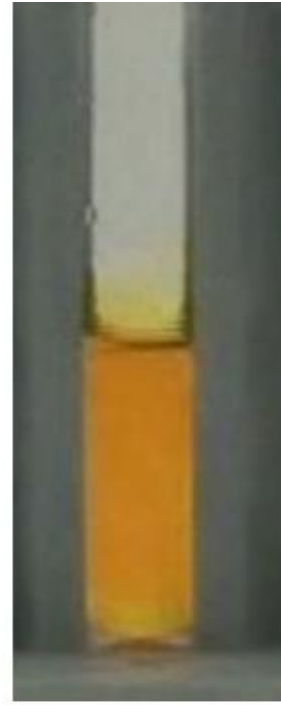


ملاحظة: استخدم هذه الصورة دائما في حل معادلات التوازن بين ايوني الكرومات وثنائي كرومات

- 1) Put (10) drops of CrO_4^{2-} in a test tube and add (2) drops of NaOH, observe the change and write down your notices.
- 2) Put (10) drops of $\text{Cr}_2\text{O}_7^{2-}$ in a second test tube, add (2) drops of HCl, observe the change and write down your notices.
- 3) Put (10) drops of $\text{Cr}_2\text{O}_7^{2-}$ in a third test tube, add (2) drops of $\text{Pb}(\text{NO}_3)_2$ or $\text{Ba}(\text{NO}_3)_2$, observe the change and write down your notices.
- 4) Put (10) drops of CrO_4^{2-} in a test tube, add (2) drops of NaOH, observe the change and write down your notices.
- 5) Put (10) drops of CrO_4^{2-} in a second test tube, add (2) drops of HCl, observe the change and write down your notices.
- 6) Put (10) drops of CrO_4^{2-} in a third test tube, add (2) drops of $\text{Pb}(\text{NO}_3)_2$ or $\text{Ba}(\text{NO}_3)_2$, observe the change and write down your notices.



+ HCl
→



+ NaOH
→



Start

Acid added

Alkali added

?

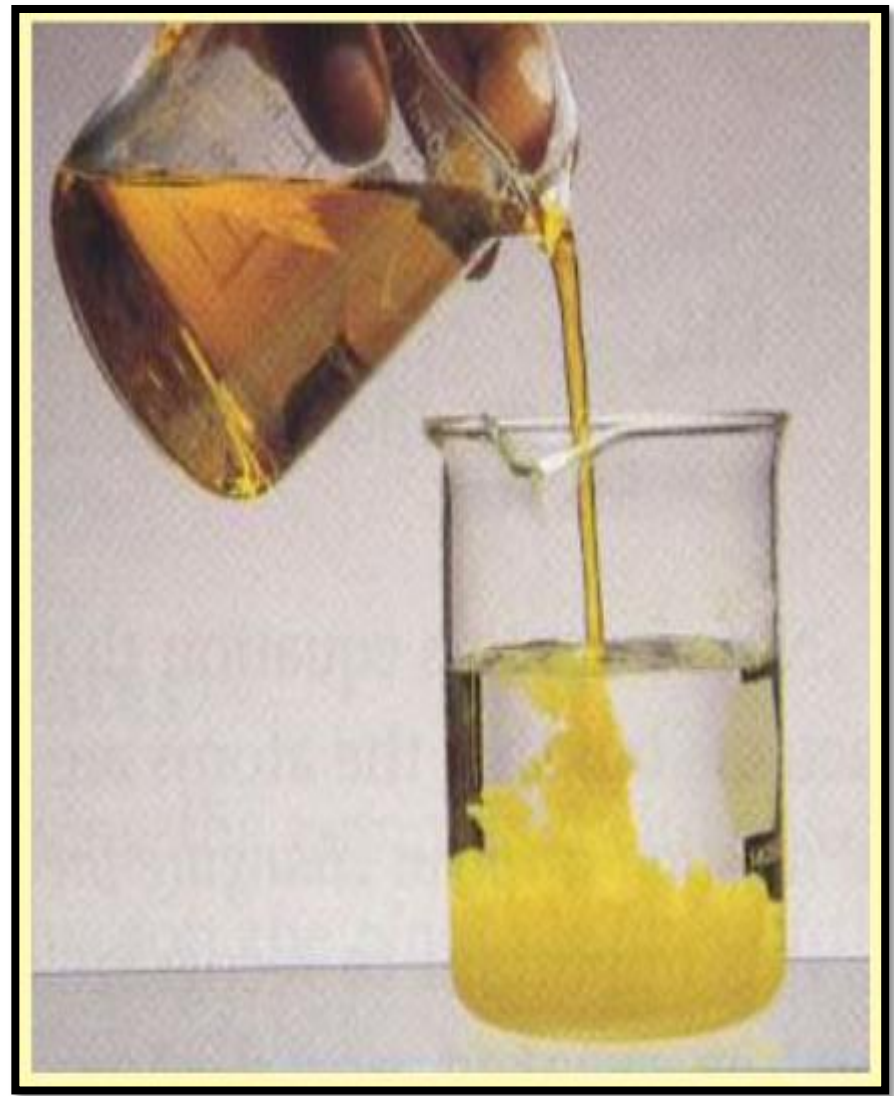
?

?

اعطي صيغ كيميائية لكل؟

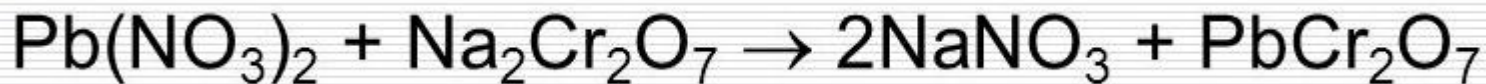
فسر الصورة التالية ؟





Questions

- 1) What happen when HCl is added to ion chromate ?
- 2) What happen when NaOH is added to ion chromate ?
- 3) What happen when $\text{Pb}(\text{NO}_3)_2$ or $\text{Ba}(\text{NO}_3)_2$ is added to ions?
- 4) This equation **TRUE OR FALS?**



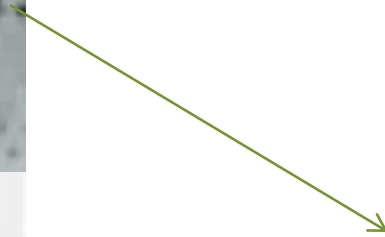
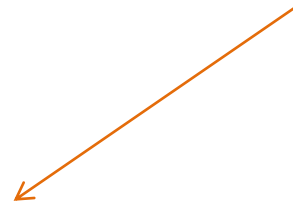
(3) Preparation of Chromic Oxide (Cr_2O_3)

Gradually put (1) gr of the orange ammonium dichromate $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ in a crucible on flame, very soon you will see flash at each addition. Pull the flame away from the bowl when the flashing happens.

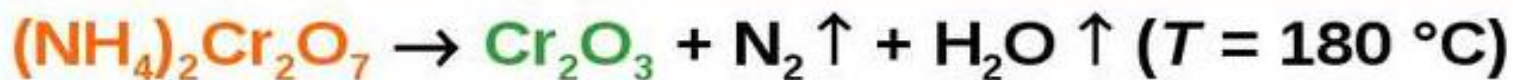
Return the flame again after flash end until the dichromate quantity is decomposed.

Reaction Equation:





لاحظ طريقة الاشعال او الحرق ودرجة الحرارة ؟
ماهو المصدر الحراري الذي استخدم في المختبر ؟؟؟؟



Questions:

- 1) What the flash means?
- 2) Calculate the product percentage.
- 3) Why dichromate is gradually added?
- 4) What is the principle of this reaction?

